

AUBURN UNIVERSITY



Fully accredited by the
Southern Association of Colleges
and Schools

ALABAMA'S
LAND-GRANT
UNIVERSITY

AUBURN, ALABAMA 36830

CONTENTS

1970-71
CATALOG NUMBER

Cover by:
SUSAN SLOVER
Auburn University graduate
in Visual Design

University Calendar	23
Board of Trustees	4
Administrative Council	5
General Information	7
School of Agriculture	58
School of Architecture And Fine Arts	75
School of Arts and Sciences	88
School of Business	108
School of Education	119
School of Engineering	142
School of Home Economics	159
School of Pharmacy	169
School of Veterinary Medicine	172
The Graduate School	177
Reserve Officers Training Corps ..	179
Description of Courses by Departments	191
Faculty and Staff	334
Enrollment Statistics	399
General Index	406

AUBURN UNIVERSITY BULLETIN

Published monthly by Auburn University, Auburn, Ala. Entered as Second-Class Matter at the Post Office at Auburn, Ala., under the Act of August 24, 1912.

VOLUME 65

APRIL, 1970

NUMBER 4

1970

UNIVERSITY CALENDAR

JULY

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

AUGUST

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

SEPTEMBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

OCTOBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

NOVEMBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

DECEMBER

Sun	Mon	Tues	Wed	Thurs	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

1970—Summer Quarter (48 class days) and
Eight-Week Term (38 class days)

May 25, *Mon.*..... Last day for completing applications for admission
 June 15-16, *Mon.-Tues.*..... Final Registration
 June 16-17, *Tues.-Wed.*..... Schedule Adjustment
 June 17, *Wed.*..... Classwork begins
 June 17-22, *Wed.-Mon.*..... Special exam period
 July 3, *Fri.*..... Independence Day Holiday
 July 13-23..... Registration for Fall Quarter
 July 21, *Tues.*..... Mid-quarter
 August 11, *Tues.*..... Classwork ends for term
 August 12-13, *Wed.-Thurs.*..... Final exams for term
 August 24, *Mon.*..... Classwork ends for quarter
 August 25-27, *Tues.-Thurs.*..... Final exams for quarter
 August 28, *Fri.*..... Graduation, 2:30 p.m.

1970—Fall Quarter (50½ class days)

August 26, *Wed.*..... Last day for completing applications for admission
 September 16-18, *Wed.-Fri.*..... Final Registration
 September 18, 21, *Fri.-Mon.*..... Schedule Adjustment
 September 21, *Mon.*..... Classwork begins
 September 21-24, *Mon.-Thurs.*..... Special exam period
 October 23, *Fri.*..... Mid-quarter
 October 26-November 5..... Registration for Winter Quarter
 October 27, *Tues.*..... General Faculty Meeting
 November 25-29, Noon *Wed.-Sun.*..... Thanksgiving Holidays
 November 30-December 4 Schedule distribution and fee payment for Winter Quarter
 December 2, *Wed.*..... Classwork ends
 December 3, 4, 7, 8, *Thurs.-Tues.*..... Final exams
 December 9, *Wed.*..... Graduation, 2:30 p.m.

1971—Winter Quarter (48 class days)

December 14, *Mon.*..... Last day for completing applications for admission
 January 4, *Mon.*..... Final Registration
 January 4-5, *Mon.-Tues.*..... Schedule Adjustment
 January 5, *Tues.*..... Classwork begins
 January 5-8, *Tues.-Fri.*..... Special exam period

UNIVERSITY CALENDAR

1971

February 1-11 Registration for Spring Quarter
 February 8, *Mon.*.....Mid-quarter
 March 8-12, *Mon.-Fri.*.....Schedule distribution
 and fee payment for Spring Quarter
 March 11, *Thurs.*.....Classwork ends
 March 12, 13, 15, 16, *Fri.-Tues.*.....Final exams
 March 17, *Wed.*.....Graduation, 2:30 p.m.

JANUARY						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1971—Spring Quarter (48 class days)

March 4, *Thurs.*.....Last day for completing
 applications for admission
 March 25, *Thurs.*.....Final Registration
 March 25-26, *Thurs.-Fri.*.....Schedule Adjustment
 March 26, *Fri.*.....Classwork begins
 March 26-31, *Fri.-Wed.*.....Special exam period
 April 26-May 6.....Registration, Summer or
 Fall Quarters
 April 27, *Tues.*.....General Faculty Meeting
 April 29, *Thurs.*.....Mid-quarter
 May 27-June 1, *Thurs.-Tues.*.....Schedule
 distribution and fee payment for
 Summer Quarter
 June 1, *Tues.*.....Classwork ends
 June 2-5, *Wed.-Sat.*.....Final exams
 June 8, *Tues.*.....Graduation, 2:30 p.m.

FEBRUARY						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

MARCH						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

APRIL						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
					1	2
					3	4
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

*1971—Summer Quarter (48 class days) and Eight-Week Term (38 class days)

May 24, *Mon.*.....Last day for completing
 applications for admission
 June 15-16, *Tues.-Wed.*.....Final Registration
 June 16-17, *Wed.-Thurs.*.....Schedule Adjustment
 June 17, *Thurs.*.....Classwork begins
 June 17-22, *Thurs.-Tues.*.....Special exam period
 July 5, *Mon.*.....Independence Day Holiday
 July 12-22.....Registration for Fall Quarter
 July 26, *Mon.*.....Mid-quarter
 August 10, *Tues.*.....Classwork ends for term
 August 11-12, *Wed.-Thurs.*.....Final exams for term
 August 24, *Tues.*.....Classwork ends for quarter
 August 25-27, *Wed.-Fri.*.....Final exams for quarter
 August 28, *Sat.*.....Graduation, 2:30 p.m.

MAY						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

JUNE						
Sun	Mon	Tues	Wed	Thur	Fri	Sat
						1
						2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

NOTE: Schedule distribution and fee payment for the Fall Quarter will be accomplished by mail prior to the opening of the quarter.

*All dates in the Summer Quarter are tentative and are subject to final approval prior to 1971-72 catalog printing.

Board of Trustees

Under the organic and statutory laws of Alabama, Auburn University is governed by a Board of Trustees consisting of one member from each congressional district, as these districts were constituted on January 1, 1961, an extra member from the congressional district in which the institution is located, and the Governor and State Superintendent of Education, who are ex-officio members. The Governor is Chairman. Members of the Board of Trustees are appointed by the Governor by and with the advice and consent of the State Senate and hold office for terms of twelve years. Members of the board receive no compensation. Trustees serve until reappointed or their successors are named.

The Board of Trustees places administrative authority and responsibility in the hands of an administrative officer at Auburn University. The institution is grouped for administrative purposes into divisions, schools, and departments.

Members of the Board

His Excellency, ALBERT P. BREWER, Governor, President

(Ex-Officio)

Montgomery

ERNEST STONE, State Superintendent of Education (Ex-Officio)

Montgomery

Term Expires 1971

Name	District	Home
R. C. BAMBERG	Sixth	Uniontown
REDUS COLLIER	Eighth	Decatur
JOHN W. OVERTON	Second	Montgomery

Term Expires 1975

JOHN PACE, III	First	Mobile
SIM A. THOMAS	Third	Eufaula
ROBERTS H. BROWN	Third	Opelika
FRANK P. SAMFORD, Vice President	Ninth	Birmingham

Term Expires 1979

WILLIAM NICHOLS	Fourth	Sylacauga
JESSE CULP	Fifth	Albertville
WALSTON HESTER	Seventh	Russellville

FIRST DISTRICT COUNTIES: Choctaw, Clarke, Marengo, Mobile, Monroe, Washington and Wilcox.

SECOND DISTRICT COUNTIES: Baldwin, Butler, Conecuh, Covington, Crenshaw, Escambia, Lowndes, Montgomery and Pike.

THIRD DISTRICT COUNTIES: Barbour, Bullock, Coffee, Dale, Geneva, Henry, Houston, Lee, Macon and Russell.

FOURTH DISTRICT COUNTIES: Autauga, Calhoun, Clay, Coosa, Dallas, Elmore, St. Clair and Talladega.

FIFTH DISTRICT COUNTIES: Chambers, Cherokee, Cleburne, DeKalb, Etowah, Marshall, Randolph and Tallapoosa.

SIXTH DISTRICT COUNTIES: Bibb, Chilton, Greene, Hale, Perry, Shelby, Sumter and Tuscaloosa.

SEVENTH DISTRICT COUNTIES: Blount, Cullman, Fayette, Franklin, Lamar, Marion, Pickens, Walker and Winston.

EIGHTH DISTRICT COUNTIES: Colbert, Jackson, Lauderdale, Lawrence, Limestone, Madison and Morgan.

NINTH DISTRICT COUNTY: Jefferson.

ADMINISTRATIVE COUNCIL OF THE UNIVERSITY

HARRY M. PHILPOTT, A.B., PH.D., D.D., LL.D., LL.D.
President

WILFORD S. BAILEY, D.V.M., M.S., Sc.D.
Vice President for Academic and Administrative Affairs

BEN T. LANHAM, JR., B.S., M.S., PH.D.
Vice President for Research

FRED R. ROBERTSON, B.S., M.S., DR. P.A.
Vice President for Extension

H. HANLY FUNDERBURK, B.S., M.S., PH.D.
Vice President - Montgomery

KATHARINE C. CATER, A.B., M.A., M.S., LITT.D.
Dean of Women

JAMES E. FOY, A.B., M.A., PH.D.
Dean, Student Affairs

L. E. FUNCHES, B.S., M.S.
Director of Buildings & Grounds

WILLIAM T. INGRAM
Business Manager

TAYLOR D. LITTLETON, B.S., M.A., PH.D.
Dean of Undergraduate Studies

W. V. PARKER, A.B., M.A., PH.D.
Dean, Graduate School

JOSEPH B. SARVER, B.S.
Director of Development

EDWIN V. SMITH, B.S., M.S., PH.D.
Director of Agricultural Experiment Station System
Dean, School of Agriculture

WILBUR A. TINCER, A.B., M.A., Ed.D.
Director of Educational Services

H. FLOYD VALLERY, B.A., M.A., Ed.D.
Assistant to the President

J. HERBERT WHITE, B.S.
Director of University Relations

Contents

GENERAL INFORMATION SECTION

THE UNIVERSITY	7
History	7
Purposes	8
Functions	8
The Academic Program	11
Fields of Study	11
The Campus and Buildings	13
Library Facilities	14
Source of Revenue	16
 FOR PROSPECTIVE STUDENTS	17
Admissions	17
Living Accommodations	24
Fees and Charges	29
Financial Aid	33
Student Services	35
Student Activities	38
Special Programs	43
 UNIVERSITY REGULATIONS	45
Academic Regulations	45
Special Regulations	55

The University

History

Chartered on February 1, 1856, as the Methodist-sponsored East Alabama Male College, Auburn University formally opened on October 1, 1859. In 1861, the Civil War interrupted the institution's growth.

The Methodist Church, unable to support the college financially after the war, presented it to the State of Alabama on February 26, 1872. The Alabama Legislature, having previously accepted the Morrill Act of 1862, established at Auburn the Alabama Agricultural and Mechanical College, the first land-grant college in the South separate from the state university. Women students were first admitted in 1892.

The college was renamed The Alabama Polytechnic Institute in 1899 in recognition of its enlarged program of teaching the sciences and arts as well as agriculture and the mechanic arts. Through its divisions of Instruction, Research, and Extension, Auburn touches the lives of most Alabamians.

Auburn's greatest growth and development has been experienced since World War II. The enrollment has increased to 14,525 on the main campus.

In 1967, the Legislature approved a \$5 million bond issue for an Auburn University campus at Montgomery. Auburn had agreed to take over the University of Alabama Extension Center and to develop it into a degree granting branch if the necessary funding could be made available. The citizens of Montgomery raised the funds for the purchase of a 500-acre site east of Montgomery on Interstate 85. The new campus is expected to be occupied in 1971. Auburn University at Montgomery admitted its first freshman class in September, 1969. It is a four-year accredited institution.

Auburn University at Montgomery also administers the graduate program at Air University, Maxwell Air Force Base; operates the Auburn University Extension Center at Selma; and is developing a continuing education program for the Montgomery area. Enrollment in the fall of 1969 at Montgomery was 812, giving Auburn University a total enrollment of 15,337.

Auburn's multi-million dollar plant is comprised of 57 main buildings located on 1,871 acres on the main campus and 500 acres on the Montgomery campus. Agricultural Experiment Station holdings over the state amount to an additional 16,814 acres.

The City of Auburn, in Lee County, was incorporated in 1838. It is 60 miles east of Montgomery, 120 miles southeast of Birmingham, and 125 miles southwest of Atlanta, Ga. Auburn sits astride the junction of the Piedmont plateau and the Coastal Plain at an elevation of 732 feet and experiences moderate temperatures throughout the year. The city has an area of about 20 square miles and a population of approximately 20,000.

Purposes of Auburn University

To maintain a community of learning where knowledge may be preserved, disseminated, and increased. (This is the fundamental purpose of all universities. To the extent that it fulfills this basic purpose of a university, Auburn University will fulfill its several particular purposes which are listed below.)

To provide the opportunity to all qualified young people of the State, regardless of their economic or social background, for a liberal and practical education.

To provide the State, the region, and the nation with educated young people who have the disciplined minds, the knowledge, and the skills to contribute needed leadership and services to society and who will help perpetuate the moral and political values upon which our society is based.

To conduct a broad program of public and private research, basic and applied, for the general increase of human knowledge, for the benefit of society in meeting its scientific, economic and social problems, and for the stimulation of the faculty and students in their quest for knowledge.

To carry knowledge and its benefits to the people of the State by means of extension programs and the use of the mass media of communications in order to help all citizens improve their technical and cultural capabilities.

To conserve our cultural heritage through support of scholarly and creative work in the humanities, social sciences, and the arts so that the University may serve both students and citizens of the State as a focal center where the cultural traditions of our civilization are kept alive and transmitted to the future.

To engage constantly in an examination of the particular objectives, goals and programs of the University in the light of new knowledge and of changing social conditions; and as a part of this constant re-examination, to seek ever more efficient and economical means of fulfilling the University's purposes.

Functions

The official seal of Auburn University carries three words, Instruction, Research, and Extension, indicating the three functional areas through which the institution operates as the State's Land-Grant University.

Instruction

The University's instructional purpose is twofold: to stimulate the student to reach his full potential as a human being through a respect for intellectual inquiry and an understanding of the cultural tradition of which he is a part; and to provide him with the knowledge and skills that will allow him to make his way successfully in a demanding and practical world.

The undergraduate curriculum at Auburn University is therefore conceived as a process wherein general and specialized studies are harmonized to produce a graduate (a) who has pursued one study area in depth (conventionally, the departmental major) for vocational or professional ends; but (b) who has also undergone intellectual experiences in representative academic disciplines: mathematics and the natural sciences, the humanities, and the social sciences.

Thus each student at Auburn University must complete, in addition to the "depth" requirements of his specialized area, a program of liberal education studies comprising approximately 25 percent of the total number of hours in his bachelor's degree program. The minimal University liberal education program is described in detail on page 57.

The baccalaureate degree is offered by the nine undergraduate academic schools incorporated in Auburn University, including 63 departments for specialized study. Master's and doctoral degrees are offered through the Graduate School. Military instruction is offered through programs in Air, Military, and Naval Science.

Research

The land-grant college upon its inception accepted responsibility for discovering and organizing knowledge in agriculture and related fields largely because of lack of subject matter for instruction.

The purposes of research suggested in the Hatch Act of 1887 provided for establishment and support of the Agricultural Experiment Station. Its objectives were to conduct research bearing on the agricultural industry, to aid in acquiring information on subjects connected with agriculture, and to promote scientific investigation into the principles and applications of agriculture.

In 1929 the Engineering Experiment Station was established to assist industries in the State to improve manufacturing processes and to study undeveloped natural resources and methods by which they may be converted into marketable products. Its services are available to industry, governmental agencies, and to citizens of the State.

In 1944 a Research Council was formed to further research, to discover and develop research talent, to cooperate with all agencies for the betterment of the South, to foster and encourage learning in natural science, social science, the humanities, agriculture and engineering, and to promote liberal and practical education in the several pursuits of life.

The Water Resources Research Institute was established in 1963 to stimulate and sponsor water resources research and the training of scientists in water and other resources as they affect water.

The Nuclear Science Center was completed in 1967. This facility provides research and teaching space for use by all departments for work in all phases of the pure and applied aspects of the nuclear science field. Work is being done in the areas of agriculture, chemistry, engineering, home economics, pharmacy, physics and veterinary medicine.

In 1967 the Office of Contract and Grant Development was established within the Office of the Vice President for Research to coordinate and service University policies and procedures relating to extramural programs in instruction, research, and extension, and to handle the activities formerly handled by the Auburn Research Foundation. Auburn's fastest expanding research area is sponsored research — contract and grant research supported by Federal, State, Foundation, and private agencies in all units of the institution.

The continuing objectives of the University are to further the frontiers of knowledge in all areas and to discover new and better ways of doing things through broadened programs of research.

Every academic school on the Auburn campus is involved in research. Auburn's faculty and graduate students are actively increasing man's understanding of man and the world in which he lives. In the sciences, the quest is for new knowledge. In the arts, humanities, and social sciences, the search is for new meanings.

While University interests are in applying scientific study and findings to current problems, equal interests exist in preparing scholars, thinkers, and workers for the future, and leaders competent in the use of the fruits of research.

The growth and development of University research parallels that of graduate enrollment. Individual research by faculty members and graduate students is encouraged and extensive programs of basic and applied research are continually expanding throughout the institution.

Extension

The development and implementation of extension programs is one of Auburn University's major responsibilities. Programs are designed to enable the University to provide a wide variety of educational services to farms, homes, industries, communities, and municipalities throughout Alabama. Over the years, Auburn University, by lectures, publications, demonstrations, and other educational methods, has extended the results of research and instruction and countless other services to the people of Alabama.

The Cooperative Extension Service is the oldest of the formally organized Extension Services at Auburn University. It was created by the Smith-Lever Act passed by the National Congress in 1914. Educational programs implemented by the Cooperative Extension Service are conducted in accordance with a Memorandum of Understanding between Auburn University and the United States Department of Agriculture. Programs in each of the 67 Alabama counties are conducted under a Memorandum of Understanding between Auburn University and the county governing body.

Cooperative Extension Service programs are organized broadly around agriculture, marketing, home economics, youth activities, community improvement and resource development.

The Engineering Extension Service was established in 1937 to implement educational programs developed in the School of Engineering and to provide educational services which would more adequately meet the needs of industries in the state. Programs of this service include short courses, conferences, workshops, and other methods of extending technical assistance to Alabama industries.

Extension programs are also conducted through the Extension Division by the Schools of Architecture and Fine Arts, Arts and Sciences, Business, Education, Pharmacy, and Veterinary Medicine. In addition, Educational Television presents public service programs, and the Ralph Brown Draughton Library works cooperatively with city, county and regional libraries to make literary materials available to people throughout the State.

In all of its extension and service programs, Auburn University continuously strives to serve the people, communities, and industries of Alabama more adequately by relating its competencies to their needs.

The Academic Program

Fields of Study

Auburn University offers work in many fields. The student has an opportunity for specialization and the pursuit of particular interests in the several Schools including the Graduate School.

For instructional purposes, the University is organized into the following Schools: Agriculture, Architecture and Fine Arts, Arts and Sciences, Business, Education, Engineering, Home Economics, Pharmacy, Veterinary Medicine, and the Graduate School.

Instruction is given in each School through four quarters of approximately 11 weeks each.

Resident instruction in the University is offered through Schools and Departments as indicated below. Regular curricula offered and degrees conferred by the several Schools are also listed.

School of Agriculture, includes the Departments of Agricultural Economics & Rural Sociology, Agricultural Engineering, Agronomy and Soils, Animal Science, Botany and Plant Pathology, Dairy Science, Forestry, Horticulture, Poultry Science, and Zoology-Entomology. Curricula offered are: *Agricultural Science, Agricultural Business and Economics, Agricultural Engineering, Biological Sciences, Food Science, Forest Management, Ornamental Horticulture, and Wood Technology*. Within each curriculum students are permitted to major in line with their special interests.

Degrees: Bachelor of Science in Agricultural Science, Agricultural Business and Economics, Agricultural Engineering, Biological Sciences (Botany, Entomology, Fisheries Management, Wildlife Management, Zoology), Food Science, Forestry, Ornamental Horticulture, and Wood Technology.

School of Architecture and Fine Arts, includes the Departments of Architecture, Art, Building Technology, Music, and Theatre. Curricula offered are: *Architecture, Building Construction, Fine Arts, Industrial Design, Interior Design, Music (Majors in Applied Music, Church Organ Music, Music History and Literature, Theory and Composition) Theatre, and Visual Design*.

Degrees: Bachelor of Architecture, Arts, Building Construction, Fine Arts, Industrial Design, Interior Design, Music.

School of Arts and Sciences, includes the Departments of Chemistry, English, Foreign Languages, Geology, History, Mathematics, Philosophy, Political Science, Physics, Psychology, Sociology, and Speech. Curricula offered are: *The General Curriculum (Majors in Humanities, and Natural and Social Sciences), Pre-Professional (Pre-Law, Pre-Dentistry, Pre-Medicine, Pre-Pharmacy, and Pre-Veterinary Medicine), and Special (Chemistry, Geology, Laboratory Technology, Law Enforcement, Mathematics, Physics, and Applied Physics)*.

Degrees: Bachelor of Arts and Bachelor of Science.

School of Business, includes Departments of Economics, Finance and Accounting, Management and Marketing and Transportation.

Degree: Bachelor of Science.

School of Education, includes the Departments of Administration and Supervision; Counselor Education; Elementary Education; Foundations of Edu-

cation; Health, Physical Education and Recreation; Secondary Education; and Vocational and Adult Education. Undergraduate curricula offered are: *Elementary Education, including Early Childhood Education and Special Education (Mental Retardation); Secondary Education with majors or minors in Art; Business Education; English; Health Education; Health, Physical Education and Recreation; Vocational Home Economics; Mathematics; Foreign Language; Music; Educational Media (School Library Science and Audio-Visual); Science; Social Science; Speech; Speech Correction and Theatre; and Vocational and Adult Education with majors or minors in Adult Education; Agricultural Education; Basic Vocational Education; Distributive Education; Industrial Arts; Rehabilitation Services; and Trades and Industrial Education.*

Degree: Bachelor of Science in Education.

School of Engineering, includes the Departments of Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Engineering Graphics, Industrial Laboratories, Industrial Engineering, Mechanical Engineering, Textile Engineering, and a Pre-Engineering program for entering freshmen engineering students. This School offers curricula in *Aerospace Engineering, Aviation Management, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, Materials Engineering, Textile Chemistry, Textile Engineering, and Textile Management.*

Degrees: Bachelor of Aerospace Engineering, Aviation Management, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, Materials Engineering, Textile Chemistry, Textile Engineering, and Textile Management.

School of Home Economics, includes the Departments of Consumer Affairs, Family and Child Development, and Nutrition and Foods. This school offers curricula in: *Clothing, Textiles and Related Art with options in Textile Design, Textile Science, and Clothing; Fashion Merchandising; Housing, Interior Furnishings & Equipment, with options in Interior Furnishings and Household Equipment; Family Life & Early Childhood Education; Home Management and Family Economics; Family & Child Services; Institution Food Management; Nutrition & Foods; and Pre-Nursing Science.*

Degree: Bachelor of Science.

School of Pharmacy, includes the areas of Pharmacy, Pharmaceutical Chemistry, Pharmacology, Pharmacognosy, Pharmacy Administration, and offers a curriculum in *Pharmacy.*

Degree: Bachelor of Science in Pharmacy.

School of Veterinary Medicine, includes the Departments of Anatomy and Histology, Microbiology, Pathology and Parasitology, Physiology and Pharmacology, Large Animal Surgery and Medicine, and Small Animal Surgery and Medicine, and offers a curriculum in *Veterinary Medicine.*

Degree: Doctor of Veterinary Medicine.

The Graduate School, administers programs leading to the degrees of Master of Arts, Master of Science, Master of Agriculture, Master of Arts in College Teaching, Master of Fine Arts, Master of Building Construction, Master of Business, Master of Education, and Master of Home Economics. Beyond the Master's degree, programs are offered leading to the degrees of Specialist in Education, Doctor of Education, and Doctor of Philosophy. The Master of Urban and Regional Planning is the newest graduate degree.

Reserve Officers Training Corps, includes the Department of Air Force Aerospace Studies, the Department of Military Science, and the Department of Naval Science.

The Campus and Buildings

Located on the Auburn campus are 58 major classroom, research, and service buildings. There are 24 women's dormitories; two men's dormitories, an athletic dormitory and 384 apartments for married students in the Caroline Draughton Village. The main campus consists of 1,871 acres, of which 420 are intensively maintained.

The Auburn Memorial Coliseum was completed and occupied in January, 1969. The arena seats 13,000, and it has stage facilities for conversion to auditorium use. It is occupied and used jointly by the Athletic Department and the Physical Education Department. The coliseum also has an auxiliary gymnasium and a swimming pool.

Haley Center, a 10-story classroom and office building, was completed and occupied in the summer of 1969. Primary use of the Center is assigned the School of Arts and Sciences and the School of Education.

Through the Auburn University Development Program, a new organization enabling Auburn alumni and friends to support the University, funds for the construction of a Nuclear Science Center were made available. A \$1,400,000 Nuclear Science Center is now in use.

Direction of the Auburn University Development Program is under a 55-member board known as the Auburn University Development Council. All gifts obtained through the Development Program are received by the Auburn University Foundation, a corporation created expressly for that purpose and administered by a seven-man board of directors.

Experiment Station Properties

The Agricultural Experiment Station System of Auburn University owns 16,731 acres of land at the ten substations, four experiment fields, four forestry units, plant breeding unit, ornamental horticulture field station, foundation seed stocks farm, and the main station at Auburn. Locations and acreages of the above mentioned units are as follows:

Main Station	Auburn	Lee	4,453
Substations:			
Black Belt	Marion Junction	Dallas	1,116
Chilton Area Horticulture	Clanton	Chilton	161
Gulf Coast	Fairhope	Baldwin	800
Lower Coastal Plain	Camden	Wilcox	2,755
North Alabama Horticulture	Cullman	Cullman	160
Piedmont	Camp Hill	Tallapoosa	1,409
Sand Mountain	Crossville	DeKalb	536
Tennessee Valley	Belle Mina	Limestone	760
Upper Coastal Plain	Winfield	Marion and Fayette	735
Wiregrass	Headland	Henry	532

Experiment Fields:

Brewton	Brewton	Escambia	80
Monroeville	Monroeville	Monroe	79
Prattville	Prattville	Autauga	80
Tuskegee	Tuskegee	Macon	237
Plant Breeding Unit	Tallassce	Elmore	664
Ornamental Horticulture			
Field Station	Spring Hill	Mobile	22
Foundation Seed Stocks Farm	Thorsby	Chilton	180

In addition to the above, there are 1,972 acres at the Forestry Units in Autauga, Barbour, Coosa, and Fayette Counties.

Library Facilities

The Ralph Brown Draughon Library, opened in January, 1963, has a study capacity for 2,000 students and room for one million volumes. Spacious reading rooms are separated by glass walls, giving a panoramic view of each floor, with fluorescent lights, contemporary furniture, and open book stacks aiding the student in his study.

The Library also contains 98 closed carrels for the use of faculty members and graduate students engaged in library research, seven rooms for listening to recordings and a projection room with 108 theatre seats where special educational films may be viewed. The building is completely air-conditioned and has public elevators for use of patrons.

On July 1, 1969, the Library contained 626,261 volumes and more than 500,000 publications of federal and state governments. Materials issued by the various branches of the federal government, the Atomic Energy Commission, and the National Aeronautics and Space Administration and others are received on depository account. The collections in microphotographic reproduction are being increased rapidly. Each floor or division has one or more special reading rooms for various microforms.

Agricultural and engineering experiment station bulletins and others are available. Quantities of books, dissertations, and documents are received on microfilm and microcards, as well as important newspapers and periodicals. More than 8,600 serials are being received as of July 1, 1969; back files are available for a large portion of these titles.

A number of special collections are maintained by the Library. Some of these are the George Petrie Memorial Collection, presented by Miss Kate Lane; the Flagg Architecture Library, given by the Alabama Institute of Architects; the Hodson Collection on the History of Agriculture, presented by Mr. Edgar A. Hodson, Arkansas State Agronomist; the personal library of the late Mrs. B. B. Ross; an excellent sports collection, donated by Mr. C. W. (Bill) Streitt; and many others. The Library also contains a collection of documents and publications in Alabama history and government.

Borrowing privileges are extended to the members of the administrative, research, instruction, and extension staffs of the University; to University alumni and to governmental departments and agencies located in Auburn. Loan privileges are also extended to all citizens of the State by inter-library

loan requests through their local libraries; to all students in residence; and to members of the Auburn Research Foundation.

Books for reserve use by the various classes are located in the Reserve Book Department on the first level. There is also a large reserve reading room, a general reading room, the Special Collections Department, a projection room and a browsing room on this floor. Popular and contemporary books, magazines and newspapers are available here. Housed on the second floor are the Humanities Division, the bibliography area, the Technical Services area, the Circulation Division, and the Administrative Offices. The third floor is devoted entirely to the Social Sciences, and the fourth floor to Science and Technology.

Branch libraries on campus are the Architecture Library and the Veterinary Library. Hours of service vary in the branch libraries.

The Department of Archives, located on the first floor, accumulates and makes available the University archives, manuscripts, letters, notebooks, articles, papers and other materials of or by the various staffs of the institution; also similar materials dealing with the State of Alabama and the South in general. The Department is not open all hours the Library is open; patrons and visitors may call the Department for information.

Sources of Revenue

Auburn University derives its support from the State and Federal Governments and from other sources. Funds are as follows:

1. Direct annual appropriations made by the State for support, maintenance, and development of public education, including campus instruction, agricultural research, agricultural extension, engineering research, and educational television.
2. Special appropriations made by the State for buildings, purchase of lands, and improvements.
3. Funds derived from the original endowment of the institution under the Federal Land-Grant Act and earnings from other subsequently acquired endowment funds.
4. Income derived from the payment by students of fees and other charges. All tuition at Auburn University is free, except to non-residents of Alabama, but certain fees are assessed to cover specific services.
5. The Morrill fund appropriated by the United States Government for the instruction of students in the sciences relating to agriculture and the mechanic arts and in the English language, literature, and for the training of teachers in agriculture and the mechanic arts.
6. Funds received from the State of Alabama through the Smith-Hughes Act derived from the congressional appropriation and paid to Auburn University for its work in the training of teachers of agriculture and home economics.
7. Such revolving funds as may be incident to the operation of any department where it is advisable to sell or dispose of products produced in the course of conducting the Agricultural Experiment Station or any other unit of the institution.

8. Gifts, grants, and donations received from alumni, private individuals, and organizations both for general and restricted educational purposes, including scholarships.
9. Direct annual appropriations made by the United States Government for research purposes and devoted to investigation of scientific agricultural problems. These funds are also for research purposes in connection with investigation of new experiments bearing directly on the production, manufacture, preparation, use, distribution, and marketing of agricultural products, and research work regarding Home Economics, and for the purpose of publishing these results.
10. Direct appropriations made by the United States Government for the Cooperative Extension Service in support of County Agricultural and Extension Home Agents, for the support of boys' and girls' 4-H club work, and for other types of extension work in agriculture and home economics in the several counties of Alabama.
11. Each county in the State makes certain appropriations to supplement those from the United States Government and the State of Alabama for the support of the Cooperative Extension Service.
12. Funds received from industry, governmental agencies, and private individuals for special contractual research projects which are handled through the Office of Contract and Grant Development by organized research units and/or in appropriate academic schools.

For Prospective Students

Admissions

General Admissions Information

Application Instructions

Application for admission to any undergraduate school or curriculum of the University must be made to the Admissions Office, Auburn University, Auburn, Alabama 36830. The necessary application forms and specific instructions may be obtained from the Admissions Office.

Students may apply for admission to any quarter of a given calendar year as early as October 1 of the preceding year. Because of the large number of applications, credentials should be filed at the earliest possible time. In every case, complete admission credentials, including the physical examination report, must be filed at least three weeks prior to the opening of the quarter in which admission is desired. The University reserves the right, however, to establish earlier deadlines should the number of applicants exceed the number of students who can be adequately housed or instructed.

A ten dollar (\$10.00) application processing fee must accompany all applications for admission. This fee is required for all undergraduate applications and is not refundable or applicable to registration or tuition fees. In submitting admission credentials, applicants must give complete and accurate information. False or misleading statements can result in denial of admission or cancellation of registration.

A provisional notice of acceptance may be issued after submission of only the application form and up-to-date academic documents, but each applicant must complete and return, at least three weeks prior to the opening date of the quarter in which admission is desired, a medical examination report on a form which will be furnished by the University. The University reserves the right to require any student to submit to such additional medical examinations as are believed advisable for the protection of the University community, and to refuse admission to any applicant whose health record indicates a condition which college work would affect adversely or which would be harmful to the students of the University. Any applicant who fails to comply with this requirement will not be admitted to the University.

Applicants may be admitted to most undergraduate curricula in any quarter; however, to Veterinary Medicine, they may be admitted in the Fall Quarter only. For additional information about admission to Veterinary Medicine, see page 172.

Non-Resident Students

Preference is given to the admission of residents of Alabama; however, applications from out-of-state residents will be accepted. The number of out-

of-state students who are accepted will be determined by the availability of facilities and faculty.

In assessing fees, students are classified as resident and non-resident students. Non-resident students (except Graduate students and sons and daughters of ministers) are required to pay a tuition fee. The term "resident" as used in this policy is interpreted to mean the state in which the parents are domiciled. Guardian is interpreted to mean a bona-fide guardian appointed in a judicial decision by a court of law.

A resident, if under 21 years of age, is one whose parents or guardian have been residents of Alabama for at least 12 consecutive months preceding the original enrollment or whose parents were residents of Alabama at the time of their deaths and who has not acquired residence in another state. In all cases of guardianship, the period of guardianship must have been not less than 12 months at the time of original enrollment. If the parents are divorced, residence will be determined by the residency of the parent to whom the court has granted custody.

A resident student, if over 21 years of age, is one whose parents are or were at the time of their deaths residents of Alabama and who has not acquired residency in another state; or who, as an adult, has been a resident of Alabama for at least 12 consecutive months preceding the original enrollment; or who is the wife of a man who has been a resident of Alabama for at least 12 consecutive months preceding the original enrollment.

Alabama laws provide that residency may not be acquired by attendance at an institution of higher learning. Students whose residency follows that of parents or guardian shall be considered to have gained or lost residency in Alabama while in college according to changes of residence of parents or guardian. For fee purposes, residence shall not be considered to have been gained until 12 months after such persons have become residents of Alabama. A dependent of a member of the Armed Forces stationed in Alabama on active duty by official orders shall not be liable for payment of non-resident tuition during the period of military assignment in Alabama.

Any question concerning residency should be directed to the Registrar. The burden of proof of residency is upon the student. A non-resident student who registers improperly under the above regulations will be required to pay not only the non-resident fee, but also a penalty fee.

Pre-College Counseling Program

As a means of helping entering freshmen and transfer students to make wiser decisions in choosing their field of study and to adjust more readily to their first quarter of college life, Auburn University has instituted the Pre-College Counseling Program.

Summer program for fall quarter freshmen — The summer program for freshmen entering the fall quarter consists of a series of sessions on campus. During these sessions students talk with trained counselors and are given the opportunity to plan, with advisors, a schedule for their first quarter of college work.

Program for freshmen entering winter, spring, or summer quarters — Students entering Auburn University as first quarter freshmen for any quarter, other than the fall quarter, are usually required to report to campus one day early for counseling activities.

Program for transfer students — Transfer students entering the winter, spring, or summer quarters are usually required to report to campus one day earlier than other students. Transfer students entering the fall quarter are given the opportunity to attend a program in the latter part of the summer to meet with advisors in order to have their transcripts evaluated and plan a schedule for the fall quarter.

Admission To Freshman Class

Standard Admission

Commensurate with available faculty and facilities, favorable consideration for admission will be given to graduates of accredited secondary schools whose college ability test scores and high school grades indicate they can be successful in fields of study in which they seek enrollment.

Although the University makes few stipulations about definite high school courses, all students planning to apply for admission should emphasize in their programs the following subjects: English, mathematics, social studies, sciences, and foreign languages. A minimum of 16 high school units is required for admission. Four of these units may be vocational subjects.

Students applying for admission to the professional curricula in architecture and interior design will be required to make a satisfactory score on the Architectural School Aptitude Test. Application for this test must be made to the Educational Testing Service, P.O. Box 592, Princeton, N. J. 98540. Tests are given on certain dates at the Auburn campus as well as at other university and college campuses throughout the United States.

Alabama residents are required to complete the American College Test (ACT) on one of the announced national testing dates. Either the ACT or the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board will be accepted for applicants from states other than Alabama. High school students may secure application forms and information regarding the tests from their principals or counselors. Scores attained on these tests are used as a partial basis for admission, for placement in English, chemistry, and mathematics, and for awarding university-administered scholarships and loans.

At least one unit of college preparatory mathematics (geometry or algebra) is required for admission to any curriculum. Curricula which list the course MH 159 or the course MH 160 presuppose a competence in the mathematics commonly taught in high school geometry and second-year algebra; and curricula which list MH 161 as a first course in mathematics presuppose, in addition, competence in high school "analysis" (specifically, the function concept, graphs of functions, the trigonometric functions). A deficiency in this latter material can be made up by taking the course MH 160 at Auburn. Auburn University offers no course comparable to high school geometry or to first and second year high school algebra.

Applicants of mature age who have not graduated from high school may be considered for freshman admission if scores made on the USAFI General Educational Development Test, the American College Test and/or such special achievement tests or subject examinations as may be recommended by the Committee on Admissions, indicate educational attainment equivalent to graduation from high school. Applicants from non-accredited high schools may be accepted if they make satisfactory scores on tests prescribed by the Committee on Admissions.

Early Admission

Students of high academic promise may be admitted directly from the eleventh year of school without the secondary school diploma. Basic requirements for early admission are:

1. Proper personal qualifications.
2. Superior competence and preparation as evidenced by the high school record, and by satisfactory scores on pre-admission aptitude tests, College Entrance Examination Board achievement tests in English, mathematics, and history or a science, pre-registration placement tests, or proficiency tests administered by appropriate departments at Auburn University.
3. A letter from the principal recommending the applicant as to emotional and social maturity and readiness for college work, and indicating approval of his early admission.

Details of procedure for consideration of early admission can be obtained from the Admissions Office.

Advanced Standing Program

Under the Advanced Standing Program, able students of superior preparation are afforded the opportunity of being placed in programs suited to their abilities and preparation for college study. Some exceptionally able students may be admitted prior to high school graduation. (See "Early Admission.") High school graduates of superior achievement may be able to qualify for advanced placement and for credit which may count toward degree requirements.

Advanced Placement — Entering freshmen who demonstrate superior preparation are accorded the opportunity of qualifying for advanced placement and/or credit, not to exceed a total of 45 quarter hours, in the following areas: Biology, Botany, Chemistry, English, Foreign Language, History, Mathematics, Physics and Zoology.

Advanced placement or credit may be granted to entering freshmen who during their senior year in high school have made satisfactory scores on the College Board Advanced Placement Examinations.

A student with special competence in a specific area, as evidenced by high school grades and scores on college ability or achievement tests, may apply for a departmental examination which may qualify him for advanced placement or credit in that department.

The amount of credit allowable through advanced placement is determined by the dean and the department head concerned. A brochure describing the Advanced Standing Program will be forwarded by the Office of High School Relations upon request.

Proficiency Examinations — Proficiency Examinations similar to final examinations may be administered by a department upon application of the individual student. A student who has pursued college-level work in secondary school, in class or on a tutorial basis, or through private study, may make application for a proficiency examination. If he earns a satisfactory grade, he will be eligible for placement in an advanced course and for credit in the subject covered by the examination.

Admission Of Transfer Students

An applicant who was not eligible for admission to the University upon graduation from high school must present a minimum of 96 quarter hours or 64 semester hours of college work attempted in order to be considered for admission as a transfer student.

For residents of Alabama or other states party to the Southern Regional Education Board, a satisfactory citizenship record, an overall average of "C" or better on all college work attempted,* and eligibility to re-enter the last institution attended are required for transfer admission. For residents of other states, in addition to the other two stipulations, an overall "B" average on all college work attempted is required. Entrance examinations may be required of applicants transferring from colleges with which the University has had little or no experience.

Graduation from a junior college does not of itself assure an applicant of admission to Auburn. Such applicants must also present an overall average of "C" or better on all work attempted. The maximum credit allowed for work done in a junior college will not exceed the number of hours required in the first two years of the student's curriculum at Auburn.

Each applicant must submit two official transcripts of his record from each institution attended. It may also be necessary for a transfer applicant to submit one transcript of his high school record.

Acceptance of Transfer Credit — The amount of transfer credit and advanced standing allowed will be determined by the appropriate dean and the Registrar. Acceptance of "D" grades is determined by the dean, except that credit is allowed in Freshman English only on grades of "C" or better. See page 48.

Students transferring from institutions not fully accredited by the appropriate regional agency may be granted provisional credit. When provisional credit is allowed, the final amount of credit will be determined after the student has completed one year of course work (credit hours and residence quarters) at Auburn University. If a "C" average is not achieved, the amount of credit will be reduced in proportion to the number of hours in which a "C" or higher grade is not earned.

A student who has completed course work at an accredited college prior to his graduation from secondary school can transfer full credit provided: (1) the college credits are not used as secondary school graduation requirements, (2) the student has a "C" average on the courses transferred, and (3) the credits would normally be accepted in the curriculum of his choice. If the college credits are used to meet the student's secondary school graduation requirements, he may apply for credit through advanced placement or a departmental proficiency examination. The department head and the student's dean will determine the appropriate action.

Admission Of Transient Students

A student in good standing in an accredited college or university may be admitted to Auburn University as a transient student when available faculty and facilities permit.

*When computing the overall grade average, Auburn University uses the 3.0 system and counts all grades earned, including those earned in courses which were later repeated.

To be eligible for consideration for admission, a transient student applicant must submit a satisfactory medical report and the Transient Student Form (in duplicate) properly completed and signed by the Dean or Registrar of the college or university in which he is currently enrolled.

Permission to enroll in courses on a transient basis is granted for one quarter only, and a student who wishes to seek re-entry in the transient classification must submit another Transient Student Form. It must be understood that transient student permission does not constitute admission or formal matriculation as a regularly enrolled student (degree candidate); however, a transient student is subject to the same fees and regulations as a regular student, except that ROTC, physical education, and academic continuation in residence requirements shall not apply.

It is the responsibility of the transient student to check with the academic department offering the courses in which the student wishes to enroll to determine if he has met course prerequisites and if he has the necessary preparation to take the courses desired.

If at any time a transient student desires to enroll as a regular student, he must make formal application for admission to the University as a transfer student and submit two complete transcripts from each college or university attended.

Admission Of Unclassified Students

For residents of Alabama and other states party to the Southern Regional Education Board, admission to undergraduate programs as an Unclassified Student may be granted on the basis of a baccalaureate degree from an accredited senior college or university. For residents of other states, Unclassified Student admission may be granted on the basis of the baccalaureate degree and an overall "B" average. Students desiring to enroll in this classification must submit the same admission credentials as transfer applicants.

Admission Of Special Students

Persons who cannot fulfill the regular admission requirements for freshman standing but otherwise have acquired adequate preparation for university courses may be admitted as special students on approval of the Committee on Admissions and the dean concerned. Course credits earned by special students generally cannot be used as credit toward a degree at Auburn University.

To change from one campus of the University to the other, special students must obtain permission of the Admissions Committee on the campus to which they wish to transfer.

Admission Of International Students

The University welcomes admission inquiries from international students. However, due to limited facilities, only those students who are academically strong will be given serious admissions consideration. In addition to being academically strong, an international student should be proficient in English. In all cases, English proficiency is determined by the student's submitting

satisfactory results on the Test of English as a Foreign Language (TOEFL), offered by the Educational Testing Service, Box 899, Princeton, New Jersey, U.S.A. 08540.

A prospective international student should initially send all of his academic credentials to the Admissions Office for an evaluation. If the prospective student appears to be academically qualified for admission and shows promise of success in his chosen field of study, he then will be asked to make formal application. The formal application must be accompanied by a recent photograph and a non-refundable U.S. \$10.00 application fee. If the applicant presents satisfactory TOEFL results and evidence that he has sufficient funds to pay for his college expenses (there is no form of financial assistance for undergraduate international students), he will be sent an acceptance and the form I-20 which is the authorization for a student visa. For additional information prospective international students should contact the Admissions Office, Auburn University, Auburn, Alabama, U.S.A. 36830.

Admission Of Auditors

When available faculty and facilities permit, a person not desiring admission for course credit may be allowed to audit a lecture course or the lecture part of a combined lecture and laboratory course with the approval of the Admissions Office, the student's dean, and the head of the department in which the course is offered. A formal application for admission must be filed, but the \$10.00 application processing fee and the physical examination report are not required. (See Auditing Privilege, page 47.)

Admission To Graduate Standing

Admission to graduate standing is granted only by the Graduate School of the University. Graduation with a Bachelor's degree or its equivalent from an accredited college or university plus submission of satisfactory scores on the Aptitude Test of the Graduate Record Examinations are requisite for admission to the Graduate School. The undergraduate preparation of each applicant for admission must also satisfy the requirements of a screening committee of the school or department in which he desires to major. Any student in good standing in any recognized graduate school who wishes to enroll in the summer session, in an off-campus workshop or in a short session and who plans to return to his former college may be admitted as a "graduate transient." For further information see section on The Graduate School and contact the Graduate School for a special catalog.

Re-admission Of Former Students

Students who have attended Auburn University and desire to re-enter must secure a registration permit from the Registrar's Office. Students who have attended another institution for one (1) quarter or semester must be eligible to re-enter the institution attended. Students attending another institution for more than one (1) quarter or semester must also have earned at other institutions attended an overall average of "C" or better to be eligible to re-enter Auburn University. Two (2) transcripts must be furnished the Registrar's Office from the institution attended.

Living Accommodations

There is general agreement that a university education is not limited to classroom activities. Desirably, important supplementary benefits are derived from the experience of living within an educational environment. The minimal housing requirements should be that accommodations are comfortable and healthful and that surroundings are conducive to study. The proper living conditions will help students to do better in their studies and can provide opportunities for personal and social growth.

Men Students

Auburn University has dormitory accommodations for approximately 1,100 men students. The men's dormitories are in two areas, Magnolia Dormitories and Sewell Dormitories.

Magnolia Dormitories consist of Magnolia Hall and Bullard Hall. Together they provide housing for 931 men. The buildings are of brick, hollow tile, and steel construction and have recently been renovated. They are located on the northwestern part of the campus with structures interconnected to form a harmonious architectural and living pattern. The units are arranged into divisions of approximately 40 students. These divisions, wherein residents share the experiences of living and working together, form the nucleus of the dormitory program. There is a resident adviser in each division. Resident advisers are assisted by senior advisers, under the supervision of the director, in carrying out the dormitory program.

Two students customarily share a room in Magnolia Dormitories. Each student has his own single bed, closet, and study table. The dormitories contain a dining hall, well appointed lounge and recreational areas, a post office, a snack shop, and other facilities to make a complete living unit. The director and senior advisers have their apartments in the buildings.

Roy Sewell Dormitory, which houses 144 scholarship athletes, is equipped with dining facilities and is supervised by a resident staff member. There are two students in each of the 72 rooms, with separate study hall and lounge.

Room Reservations — In order to provide housing for its students at the lowest rate possible, Auburn University must operate Magnolia Dormitories on the basis of a contract for the academic year and/or the Summer Quarter. The academic year consists of the Fall, Winter, and Spring Quarters; or, that portion of this period following the quarter for which a student is accepted for Magnolia Dormitories. The Summer Quarter is regarded as a separate contract period.

Men who have been notified of tentative admission by the University are eligible for housing in Magnolia Dormitories. Requests for housing application forms should be addressed to the Director, Magnolia Dormitories. Applicants will be notified promptly if housing applications for that school quarter are in excess of capacity. The completed application, with a \$25.00 check payable to Auburn University for room reservation deposit, should be returned to the Director, Magnolia Dormitories, as soon as possible. Room deposits are held to cover possible loss and/or damage to dormitory property and are not applicable to payments of room rents. The completed Housing Agreement, with prepaid rent for at least one quarter, must reach the Dormitories office not later than the applicable deadline.

Refunds of room deposit and prepaid rent will be made under the following conditions:

1. When reservations for the Fall Quarter are cancelled on or before August 1, prior to the beginning of the Fall Quarter.
2. When Winter Quarter reservations, which would be the FIRST quarter of residence, are cancelled on or before December 15.
3. When Spring Quarter reservations, which would be the FIRST quarter of residence, are cancelled on or before March 1.
4. When reservations for the Summer Quarter are cancelled on or before May 15.
5. When room is vacated at the end of a contract period and no future reservations are desired.
6. When a student is prevented from returning because of scholastic deficiencies.
7. When a resident is drafted into military service during a contract period.
8. When personal illness, or physical injury, necessitates withdrawal during a contract period.
9. When a student graduates from the University, or terminates his Housing Agreement in order to participate in one of the University's short term programs (Co-op, Vet. intern, practice teaching).
10. When a student withdraws from the University at the end of a school quarter.

Conditions governing refunds of room deposits and prepaid rent in certain other circumstances are detailed in the Magnolia Dormitories Housing Agreement. Note that a student who has signed an Agreement and who enrolls that quarter will be held responsible for fulfilling his Agreement. A student who has signed an Agreement and who does not enroll will be charged full rental for that quarter but will receive a refund of his room deposit. A student who has applied for housing, has not cancelled before the applicable deadline, but has not signed an Agreement will forfeit his room deposit regardless of whether he enrolls.

Careful precautionary measures are taken in all University dormitories and apartments to assure the security of the residents and their personal property. However, the University does not insure personal property of the residents and is not responsible for damage to, or loss of, personal property of occupants of University owned facilities. The University reserves the right to inspect periodically the rooms of students living in University housing.

Room and Board Charges — Room rent for air-conditioned rooms in Magnolia Dormitories is \$90.00 per school quarter. Rent for rooms not air-conditioned is \$70.00 per quarter. When available, private rooms are 50 percent additional. Residents of Magnolia Dormitories may elect to take meals in Magnolia Dining Hall, or elsewhere. The charge for meals, seven days a week (20 meals) in the Dining Hall is \$185.00 per school quarter. The charge for meals, five days a week (14 meals) is \$155.00 per quarter. The charge for two meals a day (9 meals a week), per quarter, is \$142.00. All board charges are subject to payment of applicable sales tax. Although every effort will be made to maintain the present room and board rates, it may be necessary to increase these charges if related costs advance abnormally.

Room rent for the first quarter of residence in Magnolia Dormitories is payable in advance to that Office not later than: Fall Quarter — August 1; Winter Quarter — December 15; Spring Quarter — March 1; Summer Quarter — May 15. Payment may be made for one quarter, or for the full academic year. Rent due, following the first quarter of residence, is payable at the beginning of each quarter. Board accounts for students electing to take meals in Magnolia Dormitories are also due and payable in full at the beginning of each quarter. However, when deemed necessary, arrangements may be made with the Cashier in the Magnolia Dormitories Office for payment in not more than three installments.

Students who, at the beginning of a quarter, elect to have meals in Magnolia Dining Hall may withdraw from such arrangements within the first two weeks of the quarter. In these instances, there is a minimum charge for the two weeks plus a \$7.50 cancellation charge. No change in board arrangements may be made by dormitory residents after this period has elapsed. Students withdrawing from school after two weeks will be charged on a daily basis plus the \$7.50 cancellation charge.

Off-Campus Housing. The majority of the male students reside in fraternity houses and in privately-owned housing within the community. These accommodations include dormitories, boarding houses, homes, trailers, and apartments. Charges for rooms without meals range from \$60.00 to \$150.00 for each school quarter. Prices for meals in the various restaurants and boarding houses range from \$170.00 to \$200.00 per quarter.

University representatives neither inspect nor approve off-campus housing. The only requirement is that the accommodations conform to the local code of health and safety regulations. However, the same general rules of student conduct apply in off-campus residences as are applicable in University operated dormitories. It is justifiably assumed that the conduct of each student living off-campus will reflect maturity of judgment and a feeling of pride in being a member of the Auburn community.

Thorough familiarity with the terms of the rental agreement and personal contact with the owner, or agent, will help avoid future misunderstandings. The quality of accommodations and the distance from the campus can best be determined through actual inspection before renting. A current file of available off-campus accommodations is maintained in the Office of Student Affairs, 304 Martin Hall. Lists of off-campus room vacancies are available upon request during the two months preceding the Fall Quarter.

Women Students

Housing for approximately 2,800 women is furnished in the women's dormitories. Residence in the dormitories is compulsory for all women students unless the Dean of Women gives them special permission to live elsewhere. A head resident is in charge of each dormitory and serves as counselor to the students as well as dormitory hostess. Women students are subject at all times to regulations of the University and the Associated Women Students.

All students residing in the dormitories must eat in the University dining halls where meals are served under the supervision of trained dietitians. Costs for special diets will be borne by the student.

The women's dormitories consist of the main dormitory group and the South Women's Dormitories.

In the main dormitory groups are the following:

No.	Name	No.	Name
I	Elizabeth Harper Hall	VIII	Ella Lupton Hall
II	Kate Conway Broun Hall	IX	Helen Keller Hall
III	Willie Little Hall	X	Marie Bankhead Owen Hall
IV	Kate Teague Hall	XII	Dana King Gatchell Hall
V	Letitia Dowdell Hall		Alumni Hall
VI	Allie Glenn Hall		Auburn Hall
VII	Mary Lane Hall		Noble Hall

Harper, Broun, Little, and Teague Halls, Social Center and the Women's Dining Hall form a quadrangle in the foreground of the dormitory area located across from the Auburn Union. The Dining Hall is readily accessible to all the dormitories in the area. Each of the dormitories, I through X, houses approximately 100 girls and is arranged in suites consisting of two double rooms connected by a tiled bathroom. The rooms are equipped with twin beds, a double desk, two desk chairs, a reading lamp, a bedside table, an easy chair and two chests. Lounge space is furnished in each building. Dormitories I through IV and VII are air-conditioned.

Dana Gatchell Hall, located on Mell Street, adjacent to the other dormitories, houses approximately 50 girls. It has community baths located at the end of the hallways and is furnished in a manner similar to the other dormitories. Gatchell Hall is a cooperative dormitory. Here the girls prepare their own meals and do their own cleaning; as a result, cost of room and board is much less than in the other dormitories.

Alumni Hall, located on South College Street, houses approximately 100 girls. This dormitory has its own dining hall located in the basement of the building. The rooms are not in suites, there are community baths, and the furnishings are the same as in the other dormitories.

Auburn Hall, on East Thach Avenue, houses 182 girls. Community baths are located conveniently on each floor. The girls living here take their meals in Alumni Dining Hall, approximately two blocks away.

Noble Hall is located on West Magnolia, next to Magnolia Dormitory for men. It houses 170 girls and was newly decorated and furnished throughout in the fall of 1968. The rooms are not in suites and there are community baths on each floor. Girls living here take their meals in Magnolia Dining Hall.

The offices of the Dean of Women, the Assistant Dean of Women, the Assistant to the Dean of Women, the Dormitory Supervisor, and cashier's office, are located in Social Center. In addition, there are two large living rooms, a dining room, and a kitchen which may be used by student groups. The post office for the girls in this area is located on the ground floor of the Women's Dining Hall.

The South Women's Dormitories are located in the area in front of the President's home. Ten new air-conditioned dormitories, a dining hall, and an administration building are in the group.

The dormitories are:

A	Mollie Hollifield Hall	F	Dixie Bibb Graves Hall
B	Annie Smith Duncan Hall	G	Camille Early Dowell Hall
C	Marguerite Toomer Hall	H	Stella White Knapp Hall
D	Zoe Dobbs Hall	J	Mary Boyd Hall
E	Berta Dunn Hall	K	Sarah Sasnett Hall

Each of the three-story dormitories houses 110 girls and the six-story dormitories, Sasnett and Boyd, house 216 girls. The rooms are arranged in suites with a connecting bath between each two double rooms. Each room is furnished with twin beds, a bedside table, two desks and desk chairs, a double dresser and an easy chair. A formal lounge and an informal lounge are in each dormitory, with study rooms on each floor.

The administration building, Lucille Burton Hall, is similar to Social Center and houses the office of the Head of Women's Housing, an Assistant to the Dean of Women, and the Assistant to the Dormitory Supervisor, the cashier's office and the post office for this area. There are several attractive lounges in the building and a number of guest rooms are on the second floor.

All students provide their own bed linens and any other items they may wish to use to make their rooms more attractive.

Room rent per school quarter is \$95 in Auburn and Alumni Halls, \$105 in the non-air-conditioned dormitories, \$115 in Noble Hall, and \$125 in the air-conditioned dormitories. This includes the cost of private phones which are located in each room. If a student moves into a room at the first of the quarter and then withdraws from the dormitory, she is charged a minimum of 1/3 of the room rent for the quarter.

All women students are required to take meals in the dormitory dining halls. There are three meal plans available. The cost of the seven days per week plan is \$175 plus sales tax. The cost of the five days per week plan is \$145 plus sales tax. The cost of the nine meals per week plan is \$132 plus sales tax. The room and board charges will be collected when the student arrives on the campus.

Room Reservations — Dormitory reservation forms will be mailed to the applicant at the time she is accepted for admission to the University. This form must be returned to the Head of Women's Housing with a deposit of \$25.00 within three weeks of the date of acceptance. No room reservation is binding until this fee has been received.

Refund of room reservation fees will be made under the following conditions:

1. When reservations for the Fall Quarter are cancelled on or before August 1.
2. When the reservations for the Winter Quarter are cancelled on or before December 15.
3. When reservations for the Spring Quarter are cancelled on or before March 1.
4. When reservations for the Summer Quarter are cancelled on or before May 15.
5. When room is vacated at the end of a quarter and no further reservation is desired, if notice has been given by the deadline stated above.
6. When a student is prevented from entering because of scholastic deficiencies.
7. When personal illness or physical injury necessitates cancellation of reservations.

A room reservation is not valid unless the applicant has been admitted to Auburn University.

Married Students

Auburn University operates the Caroline Draughton Village housing project for married students. The project has 384 apartments. Of these, there are 144 two-bedroom air-conditioned, 80 two-bedroom non-air-conditioned, and 160 one-bedroom non-air-conditioned apartments.

The apartments are furnished including an all electric kitchen, completely furnished living room and one bedroom, spacious closets, ample cabinets, all tile baths with shower-tub combination, innerspring mattresses, steam heat, and television outlet.

Deposits are accepted for housing in Caroline Draughton Village from prospective male married students, who have been accepted for admission. For additional information, write: Frank Reeves, Housing Manager, 901 W. Thach Avenue, Auburn, Alabama 36830.

Off-Campus Housing — In addition to the University-operated apartment projects, housing may also be obtained in apartments, houses, and trailers in the Auburn community. Rent for these facilities is competitive with University-operated housing. The same general rules of conduct applicable in University-operated apartments and the same referral services of the Student Affairs Office, 304 Martin Hall, as indicated on page 26, apply for married students living off-campus.

Fees and Charges

Auburn University's fees have remained somewhat lower than fees charged at similar institutions in the Southeast and throughout the Nation as a whole. As costs have risen small increases in fees charged have been authorized by the Board of Trustees from time to time to meet these increased costs. Every effort is made to hold these charges to the minimum.

Payment of fees and charges — Students are expected to meet all financial obligations when they fall due. Auburn University reserves the right to deny admission to or to drop any student who fails to meet promptly his financial obligations to the University. It is each student's responsibility to keep informed of all registration and fee payment dates, deadlines and other requirements by referring to the official university calendar of events in the catalog, announcements printed in the *Plainsman* or disseminated through other media from time to time. Where necessary, students should inform their parents of the deadline dates and the necessity for meeting them.

Checks — Checks given in payment of fees and charges are accepted subject to final payment. If the student's bank does not honor the demand for payment and returns the check unpaid, the student will be assessed the late penalty of \$5.00 or \$10.00, whichever is applicable, and if payment is not cleared promptly the student's registration will be cancelled.

Veterans — Veterans enrolled under the Federal G.I. Bill P.L. 358 and P.L. 634 receive their allowances directly from the Government and are responsible for paying their fees and charges on the same basis as other students (This does not apply to P.L. 894 or P.L. 815).

Basic Quarterly Charges

Students should be prepared to complete Registration by payment of these fees upon notice two weeks to three weeks before the beginning of the quarter.

Any student taking 10 or more credit hours or who is certified by the School of Graduate Studies as a full-time student will pay full fees.

University and Student Activities Fee (All Curricula) \$150.00

The University Fee is used to meet part of the cost of instruction, physical training and development, laboratory materials and supplies for student's use, maintenance, operation, and expansion of the physical plant, Library, Student Health Services and Student Activities.

Student Activities Fee supports such activities on campus as inter-collegiate athletics, band, debating, dramatic arts, entertainment, exhibits, Glomerata, intramural sports, music, Plainsman, lectures and concerts, religious life, social affairs, student government, student union activities and operations, and *Tiger Cub*. This fee includes 25¢ held in reserve to cover unnecessary damage to University property by students.

Non-Resident Fee \$150.00

Additional fee charged all non-resident full-time undergraduate, special, and unclassified students. This fee is not charged to graduate students and dependent sons and daughters of ministers. (See catalog section relating to residency requirements.)

Part-time Students (not exceeding 9 hours per quarter.)

Registration fee \$ 20.00

Additional fee per credit hour \$ 13.00

No additional charge is made beyond 10 hours and students who register for 10 or more hours will pay a maximum of \$150.00 as residents or \$300.00 as non-residents. The \$20.00 registration fee is remitted to full-time faculty and staff taking no more than five credit hours. All students except faculty and staff are eligible to participate in Student Health Services and Student Activities.

Clearing for Graduation Fee \$ 20.00

A student who is a candidate for a degree in a quarter in which no credit work is taken is required to register in such quarter as a pre-requisite to graduation. (For members of the faculty and staff the charge shall be reduced to \$5.00.) Graduation fee is to be paid in addition to this charge.

Other Fees And Charges

Service and Penalty Charges for Late Registration or Payment \$5.00-\$10.00

All students, regardless of classification, must clear fees and tuition by the deadline set by the University, or pay the following additional charges:

Up to and including first day of classes.	5.00
After first day of classes.	10.00
Achievement Certificate Fee	5.00
Auditing Fee (per course)	13.00
Any student who pays less than full fees must pay this fee for auditing a course. (Not charged to faculty and staff.)	
Cap and Gown Rental Fees (for Graduation Exercises)	
(includes retaining of tassel)	
Bachelors—Cap and Gown	3.50
Masters—Cap, Gown, and Hood	6.75
Doctorate—Cap, Gown, and Hood	7.40
Change in Course Fee	5.00
Charge is made in cases where student is not required or advised by the University to change, but has the Dean's permission to do so after Schedule Adjustment period.	
Change in Curriculum Fee (if change made after classes begin)	5.00
Correspondence Study Course Fees (each credit hour)	10.00
Doctoral Dissertation Microfilming Fee	25.00
Duplicate Diploma Fee	5.00
Equivalency Examination Fee (GED) (each)	7.50
Field Laboratory Program — Off Campus Courses	
Registration Fee	5.00
Additional Fee per credit hour	20.00
Graduate Thesis and Dissertation Binding Fee (per copy)	4.50
Three to five copies usually required.	
Graduation Fee	10.00
Payable at beginning of the quarter in which the student expects to receive a degree (transferrable to next quarter or refundable if student fails to qualify).	
Music Fees	
Applied Music per quarter — one ½ hour lesson per week	20.00
Applied Music — two ½ hour lessons per week	30.00
Applied Fundamentals of Music — per quarter	
(Class instruction in piano or violin)	5.00
Practice Fee — per quarter — one hour per day	3.00
two hours per day	5.00
Instrumental Rental Fee — per quarter	3.00
Physical Education Fee	2.50
For each quarter a student is enrolled in a one-hour activity course.	
Nursery School and Kindergarten	
Nursery School Group, 9 a.m. to 12 noon (per quarter)	32.00
Nursery School Group, 9 a.m. to 12:45 p.m. (per quarter)	47.00
Kindergarten Group, 1 p.m. to 4 p.m. (per quarter)	32.00

Children of multiple birth: full fee for first child; \$10.00 per quarter for each additional child.

These fees must be paid before the child is admitted. For application information, contact Head of Dept. of Family and Childhood Development.

Retail Training HE335 or

Journalism Internship JM425

Fees will be one-half the regular Full-time University Fee and one-half Non-Resident Fee if applicable.

Room and Board (Women)

\$227.00 to \$300.00

All women students, except those granted special permission by the Dean of Women, or those enrolled in the Graduate School, are required to live in dormitories and take their meals at the Women's Dining Halls. (Add sales tax for meals.)

Room and Board (Men)

\$212.00 to \$275.00

Residents in the dormitories for men may elect to take their meals in the dormitory dining halls, or elsewhere. Men students may also live off-campus. For further information see page 25. (Add sales tax for meals.)

Rent—Married Student Apartments

72.00 to 90.00

ROTC Uniform and Equipment Deposit (refundable)

30.00

All students, both Basic and Advanced, are required to deposit the sum of \$30.00 with the Bursar of the University, prior to enrollment in ROTC, except Naval ROTC. They are then furnished a uniform in good condition and other necessary supplies through the ROTC Supply Office. Upon completion of the ROTC course of instruction, or upon withdrawal of the student therefrom, the uniform and other supplies are turned in and the deposit returned to the student, less \$1.50 per quarter withheld by the Bursar of the University to cover the cost of repair of uniforms, when applicable, and to support ROTC activities as follows: scholarship and marksmanship awards; special apparel and equipment for competitive drill teams, ROTC honoraries, and rifle teams representing Auburn University ROTC; uniforms for sponsors; the official annual Military Ball in an amount not to exceed \$.40 per cadet enrolled that quarter. This charge is subject to change in accordance with requirements of the Army, Navy, and Air Force training programs.

Service and Penalty Charges

- | | |
|--|---------------|
| (a.) Registration fees billed home | 2.00 |
| (b.) Charge for returned checks (each) | 2.00 |
| (c.) Failure to pay fees due or make returned check good on notice, where two or more notices required | 5.00 or 10.00 |
| Notice — CHECKS ARE ACCEPTED SUBJECT TO COLLECTION | |

Special Examination Fee

- | | |
|--|------|
| If taken at a regularly scheduled period | 2.00 |
| If taken out of regularly scheduled period | 5.00 |

Special Services Fees

Cooperative Education Program	15.00
Internship Fee — Veterinary Medicine	15.00
Postdoctoral Fellow; One-time enrollment	15.00

Transcript Fee

1.00

Registration Fee Cancellations or Refunds

If student pays fees prior to opening of the quarter then officially resigns PRIOR to the beginning of the quarter all fees (except late fees) will be refunded. If student resigns within the first two weeks after classes begin, all fees, less charges, will be refunded except the sum of \$20.00 will be retained as a handling fee, and if the student has used the University Health Services during that quarter, the \$7.00 Health Services Fee will be retained also. No refunds will be made in case of withdrawal (resignation) after two weeks of classes, except in cases of withdrawal caused by personal illness (statement of confirmation from physician required) or call into Military Service (copy of activation orders required). Students suspended for disciplinary reasons are not eligible for refunds or cancellation of accounts due.

See Auburn University at Montgomery Bulletin for fees and charges at the Montgomery Division.

Financial Aid

Auburn University has an Office of Student Financial Aid to provide financial assistance to aid worthy students in meeting educational costs incurred while attending the University.

The University participates in the College Scholarship Service (CSS) of the College Entrance Examination Board. Participants in CSS subscribe to the principle that the amount of financial aid granted a student should be based upon financial need. The CSS assists colleges and universities and other agencies in determining the student's need for financial assistance. Entering students seeking financial assistance are required to submit a copy of the Parents Confidential Statement (PCS) form to the College Scholarship Service, designating Auburn University as one of the recipients, by March 1 of each year.

A pamphlet describing financial aid programs and procedure for making application may be obtained by writing to the Office of Student Financial Aid, Auburn University.

Available Assistance Programs

Scholarships — Awards made to students with financial need who have demonstrated high academic promise and attainment.

Federal Educational Opportunity Grants — Limited number of grants for students with exceptional financial need.

National Defense Student Loan and Institutional Loans — Long term loan programs for students who can demonstrate need.

Federal-State Student Guaranteed Loans — Long term loan program whereby students may borrow from lending institutions (banks, credit unions, etc.)

College Work-Study Program — Program of employment for college students coming from low income families, who need to work to remain in school.

Student Employment — Many students are able to find part time employment on and off campus. A student may file an application with the Office of Student Financial Aid and vacancies are filled as they occur. The office acts as a referral agency and cannot promise jobs to students. Student wives may secure assistance in locating employment by contacting the University Personnel Office.

Graduate Aid — To promote Scholarship and research among graduate students, a number of Graduate Teaching Assistantships, Graduate Research Assistantships, Graduate Fellowships and Traineeships are available. Contact the Head of Department of major interest for information and application.

Social Security — Consult the local or county Social Security Office.

Vocational Rehabilitation — Consult the State Rehabilitation Office, Room 461, State Office Building, Montgomery, Alabama 36104.

Benefits For Veterans And Dependents Of Veterans

Federal — Consult local County Veterans Service Officer or Veterans Administration Office, Montgomery, Alabama 36104.

Many current publications describe in complete detail the educational programs authorized by Congress under the following federal acts: Public Law 16 (Vocational Rehabilitation), Public Laws 894 and 815 (Vocational Rehabilitation Revised), Public Law 634 (War Orphans Educational Assistance Act) and Public Law 358 (Veterans Readjustment Benefits Act of 1966).

Auburn University is fully approved by the Veterans Administration to give training under these laws. Veterans planning to attend school under one of these laws should make application directly to the Veterans Administration and get prior approval before entering school.

Those entering school under the benefits of any one of the laws should have sufficient funds to finance themselves for one quarter or at least until payments begin coming in from the Veterans Administration (approximately two months).

For further information write to the Office of Student Financial Aid, Auburn University, Auburn, Alabama.

State — Consult the Department of Veterans Affairs, P.O. Box 1509, Montgomery, Alabama 36104.

Employment

The Student Financial Aid Office in 202 Martin Hall assists students in obtaining employment to defray a portion of their educational expenses. The University, however, does not advise freshmen to attempt work during their first quarter on campus unless it is essential. Earnings vary with the job requirements and previous work experience. Since employers must know when a student is free for work, little assistance can be given any student until his class schedule is known.

The Office functions only as a referral agency and cannot promise jobs to students; however, every attempt is made to place capable students needing work.

Students are also assisted in locating full-time summer employment at resorts, national parks, camps, with governmental agencies and in business and industry. Information and applications for such employment should be secured early in the Winter Quarter.

Student wives and other non-students may secure assistance in locating suitable employment on the campus by contacting the University Personnel Office which is located on the ground floor of Langdon Hall.

Student Services

The Dean of Student Affairs, the Dean of Women, and their respective staffs assist students with their problems and aid them in adjusting to University life. Their offices serve as general clearing houses for matters pertaining to the welfare of all students.

The Dean of Student Affairs works with individuals and groups in areas of mutual concern. His office is located in Mary E. Martin Hall. He supervises men's dormitories, campus publications, counseling services, and Union activities, and he serves as adviser to organizations, fraternities, and the Student Government Association.

The Dean of Women's duties include matters pertaining to the welfare of all women students. As Social Director, she approves all social functions that University women attend. Also she supervises women's housing and is adviser to sororities and Associated Women Students. She and her staff have offices in the Social Center.

Counseling Service

A variety of services is provided for all students free of charge by the Student Counseling Service in 305-318 Martin Hall. Students may come by the offices in person to make an appointment or call 826-4744. The offices are open from 8 a.m. to 12 noon and 1 to 5 p.m., Monday through Friday.

The staff of the Student Counseling Service thinks of counseling as a process in which the student comes to the counselor voluntarily to gain additional self-understanding that he may solve his own problems as they arise now and in the future. The counselors are concerned with helping students find solutions to their problems. They respect the ability of the students to make their own choices after they have a better understanding of themselves. Counseling is available to all students at Auburn. These services include:

Career Counseling. Counselors assist students in making a thorough self-appraisal of interests, abilities, and personality traits so that they may utilize this information in making a wise career choice. Counselors interpret the data from tests, discuss all possibilities of success, and help the student work through the decision-making process. Students who are indecisive about a major, or who wish information on their adaptability to selected programs of study may gain a realistic appraisal of themselves through counseling and become better equipped to make more intelligent academic choices.

Educational Counseling. In addition to the academic departmental advisors of the University, the Student Counseling Service provides services to students who are having academic difficulties. Attempts will be made to determine the causes of the difficulty. Counselors help students in study habits, note taking, and listening skills. Educational Counseling is interrelated with other areas, and only by a complete understanding of all problems can a student's academic difficulties be alleviated.

Personal Counseling. Many University students have personal concerns which may interfere with their academic success. Counselors attempt to offer an atmosphere in which students may discuss such problems freely and confidentially. Personal emotional adjustment, dating, marriage, home relationships, social relationships, adjustment to college work, and plans for the future are only a few of the many concerns. Often, effective solutions can be reached by a student through a counselor-counselee relationship.

Group Counseling. Individual growth and development often are enhanced by experiences in small groups that meet regularly with Student Counseling Service staff members.

Career Information Library. The student interested in studying a curriculum or an occupation in terms of a career choice will find that this library has information about hundreds of fields. It is open 40 hours a week and no appointment is needed. Deans office counselors and professors are invited to refer students to the reading room.

Conferences with Prospective Students. High school seniors and college students who wish to explore curriculum offerings at Auburn University can arrange for a 30 to 40 minute appointment. Alternate dates and hours should be proposed so that the appointment will fit in with a counselor's schedule. By mail, a week or 10 days is needed as time for confirmation. If the appointment is made by telephone, the time interval may be as short as a day or two. Parents of high school seniors are invited to participate in these conferences.

University Placement Service

The University Placement Service assists students and alumni in securing business and professional positions through its contacts with potential employers. The service is available to any student or alumnus without charge.

Representatives of commercial and industrial firms as well as government agencies visit the office each quarter for personal interviews with students.

Seniors and graduate students who desire information and placement assistance should confer with the Director, 400 Martin Hall.

Student Health Service

The Student Health Service of Auburn University renders the following services: (1) out-patient medical and surgical service by staff doctors only; (2) hospitalization at the University Infirmary; (3) local ambulance service; (4) medical supervision of the physical education and athletic programs; (5) health education; and (6) campus sanitation. These services are administered by the medical staff of the Health Service.

The University owns and operates a 65-bed infirmary equipped with a modern clinical laboratory and X-ray facilities. Working in conjunction with

the State Health Department, annual tuberculosis skin testing is available for students, faculty and employees of the institution.

Each entering student is required to file a medical examination report completed by his private physician before he can be admitted to Auburn University. Forms for this report will be furnished by the University.

The Student Counseling Service and the Student Health Service are available to students in helping them solve emotional problems. A psychiatrist is also in attendance at the Infirmary. The Infirmary also has a well-equipped physiotherapy department. A qualified physiotherapist is in attendance two afternoons each week.

No major surgery is performed in the Infirmary. Elective surgery should be performed in the student's home town, or by referral to a specialist during vacation periods or to a local surgeon. Emergency surgical operations are the responsibility of the student. Students who are in need of emergency operations and those having severe multiple or compound fractures will be referred for treatment and the expense will be a responsibility of the student. The University has available a surgical consultant who may be called when needed. The expense will be charged to the student requiring such consultation.

The Student Health Service is available to all regularly enrolled students of the institution. Medical service is not provided by the University for the families of married students, but a list of local physicians will be made available by the Student Health Service upon request.

The Out-Patient Clinic is open from 8:00 a.m. to 11:30 a.m. and 1:00 p.m. to 4:00 p.m. each week day, Monday through Friday. Clinic hours are from 8:00 a.m. to 11:30 a.m. on Saturday, and 8:30 a.m. to 9:30 a.m. on Sunday. Emergency treatment is available 24 hours daily. Visiting hours at the Infirmary are from 10:00 a.m. to 1:00 p.m., 3:00 p.m. to 8:00 p.m. each day. Only two visitors per patient are allowed simultaneously.

University physicians do not make calls outside the Infirmary or attempt to treat students in their rooms. Students who are too ill to come to the Infirmary will be furnished with local ambulance service. Parents will be notified by the University physician if a student is believed to be seriously ill.

Each student is entitled to 15 days free hospitalization at the University Infirmary during each school year. This includes professional services of the medical staff of the Student Health Service, general floor nursing care, ordinary medications, room and board, linen, routine laboratory and X-ray procedures.

The Student Health Fee does not include surgery, consultation, special X-rays, special medications, or special nurses. A charge is made for these, but only an amount sufficient to cover the cost.

The services of local physicians are available at the students' expense either at their places of residence or when properly admitted to the University Infirmary.

The Student Health Service is not available to students during the following vacation periods: Christmas holidays and the periods between the close of the Summer Quarter and the opening of the Fall Quarter.

During epidemics, the staff of the Student Health Service will make every possible effort to care for ill students at the Infirmary, but if Infirmary staff and facilities should be inadequate, the University will not assume responsibility for payment of services rendered by outside doctors or other hospitals.

Speech And Hearing Clinic

The Speech and Hearing Clinic of the Department of Speech provides a full range of services for children and adults, including comprehensive speech and hearing examinations. Students with speech problems, or hearing problems are urged to contact the Speech and Hearing Clinic during their first quarter of residence. The Speech and Hearing Clinic also carries on a continuing program to provide assistance for all students for whom English is a second language. Appointments may be made in Room 1198 Haley Center for speech and/or hearing examinations or by calling 826-5545. No fees are charged for student services.

Student Bookstores

Alpha Phi Omega service fraternity sponsors a non-profit bookstore on the campus. The purpose of this store is to provide a more economical means for students to purchase and sell their books. The bookstore is located in the subway of the "L" building. A University Book Store is located in Haley Center.

Student Insurance

The Student Government Association sponsors an Accident and Sickness Insurance Plan which is available to all full-time or part-time undergraduate and graduate students. This Plan is underwritten by the Guarantee Trust Life Insurance Company, Chicago, Illinois, and is administered by a local insurance agency. It provides the student with maximum coverage at minimum cost. Benefits include hospital fees and expenses, surgery, visits by a physician, ambulance service, X-rays, as well as other items. Enrollment in the Plan is offered during each registration period. Further information may be obtained from the Office of Student Affairs, 304 Mary Martin Hall.

Student Activities

The Student Body

The Student Government Association is the organization which officially represents the student body. Upon enrollment at Auburn University, each student becomes a member of the S. G. A. Its primary objective is that of working cooperatively for the betterment of Auburn students. All students are encouraged to participate in the Student Government Association and to become involved in the political life of the campus.

Student Government is composed of the executive, legislative, and judicial branches. The executive group consists of the president, vice-president, secretary, treasurer, and members of the executive cabinet. Members of the legislative branch, the student senate, represent the ten University schools. In addition, there are six senators-at-large. The student jurisprudence committee has a presiding justice and six associate justices.

Officers and senators of the Student Government Association are elected by members of the student body in the Spring Quarter general elections. Other positions are appointive by the president with concurrence by the senate. The

Student Government Constitution, published in the *Tiger Cub*, details the functioning of student government.

Associated Women Students

The purpose of the Associated Women Students is to uphold high standards of scholarship, and to create, promote and maintain a high sense of honor and integrity in all phases of University life.

Each Auburn undergraduate woman student is automatically a member of AWS when she enters the University. AWS is made up of three councils: the Executive, Legislative, and Judiciary. The Legislative Council is composed of representatives of the dormitory house councils and the elected officers.

AWS plans and conducts a well-organized program for women students.

Student Publications

The Auburn Engineer — published monthly for and by students in Engineering.

The Auburn Pharmacist — published quarterly by Phi Delta Chi, professional Pharmacy fraternity.

The Auburn Veterinarian — booklet published quarterly for and by students in Veterinary Medicine.

The Glomerata — student publication; production costs covered by Student Activities Fee, student organizations and advertising.

The Helm — a monthly paper published by NROTC students.

The Auburn Plainsman — a weekly paper published by students of the institution; production costs covered by Student Activities Fee and advertising.

The Tiger Cub — annual student handbook; production costs covered by Student Activities Fee and advertising.

The Auburn Union

The Auburn Union is the center of non-academic student and faculty life. The building, located in the heart of the campus, provides a living room for students away from home — a place to relax, to entertain friends, and to find convenient dining services. Planned programs of social, recreational and cultural events help develop students in the art of human relations.

Located in the Auburn Union are the War Eagle Cafeteria and Snack Bar, Alumni Offices, Faculty Club, Student Government Offices, Publications Offices, Union Ballroom, meeting rooms for student organizations, commuters lounges, banquet rooms, reading and TV lounges, and Union staff offices.

The main desk has become the central information center on campus. On hand are the registration cards of each student enrolled, listing class schedule, home address, and campus address.

Cultural, Musical, Theatrical Activities

Lectures and Concerts. Outstanding concert artists and nationally known lecturers are presented each year for Auburn students. Additional lectures, concerts and special programs are presented by the various Schools, and the Auburn Union sponsors frequent entertainment by popular artists. Most of these events

are financed by the student activities fees; students are admitted without charge upon presentation of ID cards.

Auburn University Theatre. The Department of Theatre functions as producer for this organization. The season of plays reflects the commitment of the Department to expose actors, designers, technicians and teachers to a wide variety of literary theatrical forms and to present this material to the entire University and city community for its enjoyment and cultural enrichment. At present, seven productions are being offered during the regular school year. Two of these are children's plays which tour public schools in Alabama and Georgia. Students from all areas of the University and faculty members and members of the community are welcome to audition for all productions. The Auburn Players is a dramatic organization whose purpose is to promote interest and participation in the theatrical field.

Auburn University Concert Choir is limited to approximately 50 members, open to all students by audition. The choir sings concert and special programs on campus each quarter, takes an annual spring tour, makes regular television appearances, and sings for various functions around the state. Rehearsals are held daily, and degree credit is available.

Choral Union, a large chorus, is open to anyone without audition. This group usually sings two concerts a year, consisting of large choral works, often with the Auburn Symphony Orchestra. Rehearsals are held once a week and degree credit is available.

Men's Glee Club is open to all male students. It makes regular appearances on campus and in the surrounding area. The music is of a lighter nature, including popular music and Auburn songs. Rehearsals are held once a week, and degree credit is available.

Marching Band. Auburn University supports a Marching Band which frequently accompanies the football team on game trips, and represents the University at various campus, state, and out-of-town functions. It consists of approximately 140 players who receive special training in drill formations. Physical Education may be waived during the fall quarter for students who are members of the Marching Band.

Concert Band consists of advanced students who have passed the work of the preliminary bands, and students who are preparing to teach band in the schools. It provides music for various University activities and some off-campus concert tours. Regular training which embodies instruction in the rudiments of music and the use of band instruments is given free of charge at the band practice periods. These activities may be taken with or without degree credit.

Orchestra. The Music Department sponsors this symphonic group for the development of musical talent and perfection of individual achievement in ensemble playing. Students in the early stages of musical training, especially those in violin, viola and cello, are invited to participate. Membership is by permission of the director. This activity may be taken with or without degree credit.

Opera Workshop. The Workshop is open to all students interested in musical or dramatic work in producing operas. Membership is open with or without degree credit. Students are trained in the various phases of operatic production largely through performances of scenes from outstanding operas.

Educational Television. Programs produced in the Auburn Television Studio are seen throughout the state on the Alabama ETV Network, 2, 7, 10,

25, 26, 36, 42, and 43. Staff members in all areas of instruction, research and extension take part in this programming. The Studio offers opportunity for Auburn students in television either through regular courses, positions for observation or employment in either the technical or program production areas.

Intramural Sports

Intramural sports offer students many opportunities to participate in competitive team and individual sports, and recreational activities. Healthful sports, good sportsmanship, and friendly competition are stressed. All students are urged to participate in the program which is entirely voluntary and largely student-supported and supervised.

Regular tournaments are offered in seasonal team and individual sports.

Fall Quarter. — Touch football, swimming, volleyball, golf.

Winter Quarter. — Basketball, bowling, table tennis, weight lifting, wrestling.

Spring Quarter. — Badminton, softball, tennis, track, horseshoes.

Summer Quarter. — Softball, tennis, golf, swimming, bowling.

Intramural sports for men also operates check-out services in the Student Activities Building, Memorial Coliseum, and Magnolia Dormitory. Any student or student group may check out recreation equipment on a daily basis.

Informal recreational hours are scheduled for leisure time activities at the Student Activities Building, Sports Arena, and Memorial Coliseum.

Organizations

National Honor Societies

The following members of the Association of College Honor Societies have established chapters at Auburn:

Alpha Epsilon Delta (Pre-Medicine)
Alpha Lambda Delta (Freshman Scholastic—Women)
Alpha Psi Omega (Theatre)
Chi Epsilon (Civil Engineering)
Delta Sigma Rho—Tau Kappa Alpha (Forensics)
Eta Kappa Nu (Electrical Engineering)
Mortar Board (Student Leadership—Senior Women)
Omicron Delta Kappa (Student Leadership—Junior & Senior Men)

Phi Alpha Theta (History)
Phi Eta Sigma (Scholarship—Freshmen—Men)
Phi Kappa Phi (Scholarship—Senior Men and Women)
Pi Tau Sigma (Mechanical, Aerospace Engineering)
Psi Chi (Psychology)
Rho Chi (Pharmacy)
Sigma Pi Sigma (Physics)
Tau Beta Pi (Engineering)
Xi Sigma Pi (Forestry)

Other National Honor Societies:

Gamma Sigma Delta (Agriculture)
Kappa Delta Pi (Education)
Omicron Nu (Home Economics)

Pi Mu Epsilon (Mathematics)
*Pi Delta Phi (French)

National Recognition Societies

The following national societies have chapters established at Auburn:

Alpha Phi Omega (Campus Service—Men)
Alpha Zeta (Agriculture)
Arnold Air Society (Air Force ROTC)
Angel Flight (AFROTC Coed Auxiliary)
Block and Bridle (Animal Science)
Gwens (Student Leadership—Sophomore Women)
Omicron Delta Epsilon (Economics)
Pershing Rifles (Air Force & Army Basic Cadets)

Phi Beta Lambda (Business Education)
Phi Lambda Upsilon (Chemistry)
Phi Zeta (Veterinary Medicine)
Pi Sigma Epsilon (Marketing)
Scabbard and Blade (Military)
Sigma Delta Pi (Spanish)
Sigma Tau Delta (English)
Steerage (Navy ROTC)

Campus Leadership and Service Organizations

"A" Club—Varsity lettermen in baseball, basketball, football, track or cheerleading.
 Auburn Veterans Association—Service Organizations open to veterans of the Armed Services.
 Circle "K" Club—International Service Club for college men sponsored by Kiwanis International.
 *Conservative Club—For those students interested in conservative government.
 Spades—Honor Society of ten most outstanding senior men.
 Squires—Honor Society for most outstanding sophomore men.
 Towers—Independent Women's Service and Social Organization.

Religious Organizations

Baptist Student Union—Baptist The Canterbury Forum—Episcopal Church of Christ Student Group—Church of Christ Christian Science Organization—Christian Science Jewish Hillel Group—Jewish	Liahona Fellowship—Reorganized Church of Jesus Christ of Latter Day Saints Lutheran Student Fellowship—Lutheran Newman Club—Catholic Unitarian Universalist Fellowship—Unitarian Wesley Foundation—Methodist Westminster Fellowship—Presbyterian
--	---

Departmental and Professional Organizations

Agricultural Council Agricultural Economics Club Agronomy Club Alpha Pi Mu (Industrial Engineering) American Association of Textile Colorists and Chemists American Chemical Society American Institute of Aeronautics and Astronautics American Institute of Architects American Institute of Chemical Engineers American Institute of Electrical & Electronic Engineers American Institute of Interior Designers American Pharmaceutical Association American Society of Agricultural Engineers American Society of Civil Engineers American Society of Mechanical Engineers American Institute of Materials Engineering Art Guild *Auburn Aero Club *Auburn Art Forum Auburn Conservation Club Auburn Co-operative Education Society Auburn Debate Council *Auburn German Club Auburn History Club Auburn Law Society Auburn Players Auburn Soccer Club *Auburn University Sport Parachute Team Auburn Student Education Association Auburn Tiger Sharks (Skiing) Association for Childhood Education *Association for Computing Machinery Block and Bridle Club	Builders Guild Chemistry Council Collegiate 4-H Club Dairy Science Club Dana King Gatchell Home Economics Club Delta Omicron (Music—Women) Delta Sigma Pi (Business Administration) Education Council Engineers Council Forestry Club Future Farmers of America Home Economics Council Horticultural Forum Industrial Arts Club Industrial Design Forum International Relations Club Jr. American Veterinary Medical Association Kappa Epsilon (Pharmacy—Women) Kappa Psi (Pharmacy—Men) Lambda Tau *National Collegiate Association for Secretaries Omicron Kappa Pi (Interior Design) Pharmacy Council Phi Delta Chi (Pharmacy) *Phi Lambda Sigma (Pharmacy) Phi Psi (Textiles) Physical Education Club Poultry Science Club Pre-Veterinary Medical Association Saddle D'Armes Fencing Club Scarab (Architecture) Society for the Advancement of Management Science and Literature Council Spiked Shoe (Varsity Lettermen in Track) Sociology Club Women's Recreation Association
---	--

Student Wives Clubs

Dames Club Forestry Wives Club Junior AVMA Auxiliary Keystones (Building Construction)	Pharmacy Wives Club Wives of Auburn Engineers Wives of Industrial Management Students
---	---

Social Fraternities

Alpha Epsilon Pi Alpha Gamma Rho Alpha Psi (professional) Alpha Tau Omega Beta Theta Pi Chi Phi Delta Chi Delta Sigma Phi Delta Tau Delta Delta Upsilon Farm House (colony) Kappa Alpha Order	Kappa Sigma Lambda Chi Alpha Omega Tau Sigma (professional) Phi Delta Theta Phi Gamma Delta Phi Kappa Tau Pi Kappa Alpha Pi Kappa Phi Sigma Alpha Epsilon Sigma Chi Sigma Nu Sigma Phi Epsilon
--	---

Sigma Pi
Tau Kappa Epsilon

Theta Chi
Theta Xi

The Interfraternity Council regulates the relationships between the member fraternities.

Sororities

Alpha Chi Omega
Alpha Delta Pi
Alpha Gamma Delta
Alpha Omicron Pi
Chi Omega
Delta Delta Delta
Delta Zeta

Gamma Phi Beta
Kappa Alpha Theta
Kappa Delta
Kappa Kappa Gamma
Phi Mu
Pi Beta Phi
Zeta Tau Alpha

The Pan-Hellenic Council regulates the relationships of the sororities.

*Organizations marked by an asterisk are serving a trial period prior to official University recognition.

Special Programs

Correspondence Study Program

The Correspondence Study Program provides undergraduate instruction for persons unable to attend college on a regular basis. Correspondence courses parallel those given in the University and are taught by members of the University faculty. All courses carry college credit.

Organization of Courses — A complete course outline with full information and instructions is sent to the student upon registration. Courses consist of varying amounts of credit and numbers of units. Each work unit requires certain textbook readings and written preparation. Supplementary reading and reports may be required of the student by the instructor on any assignment. Written work is submitted to the Correspondence Study Office.

Qualifications — Any person who might profit from college level courses is eligible to enroll. No entrance examination is required for admission to correspondence study, but the right is reserved to reject any applicant who does not furnish complete or satisfactory data on the formal application. Enrollment for correspondence study does not constitute admission to Auburn University.

Restrictions placed on Auburn University students regarding correspondence work are described in the regulations in Section III of the Correspondence Study Bulletin.

Credit — Undergraduate credit equivalent to that earned in regular college classes is given for correspondence work. Although graduate credit cannot be earned by correspondence, certain undergraduate deficiencies may be cleared.

Examinations — A final examination is required in each course upon completion of all unit work. The examination should be taken in the Correspondence Study Office but may, on approval, be taken elsewhere under the supervision of an approved proctor. Proctors approved are city or county superintendents of schools, principals of accredited senior high schools, and/or deans and department heads of colleges. Students in military service may arrange to take the examination under the supervision of the Education Officer of their station.

Fees — Fees for correspondence courses are listed in the catalog under "Fees and Charges" (see page 29). Fees are payable in advance and should accompany the application.

For application form and further information write to Director, Auburn University Correspondence Study Program.

Co-operative Education Program

The Co-operative Education Program provides opportunities for students to alternate quarters of academic study with quarters of experience in industry, education, business, and government positions.

The coordination of academic study and work experience combines theory and practice in the educational process. As a consequence students find more meaning in their studies and their motivation is increased. This experience contributes to the development of a sense of individual responsibility. The student's judgment and maturity also develop more fully, and a better appreciation of the importance of human relations is gained. Since the employer pays the student a wage or salary during the experience quarters, this assists the student considerably in his educational expenses.

For all four-year curricula, the Co-operative Education Program is a five-year plan. A student must complete at least two quarters of the freshman year with an above-average scholastic record before he is placed with an employer. Transfer students are also considered for the program. Normally a student has seven experience quarters and during the senior year he remains in continuous residence in school.

For five-year curricula (i.e. architecture and pharmacy) the Co-operative Education Program is a six-year plan.

Students in the Co-operative Program continue their 2-S deferments whether at work or at school. Upon completion of the program, certificates are awarded by the University.

The program is offered in all curricula of the Schools of Business, Engineering and Education. Students in the Applied Physics, Architecture, Art (Visual Design), Building Technology, Home Economics, Industrial Design, Journalism, Mathematics, Pharmacy, Physics, Political Science, Pre-Law, and other curricula may also participate in the program.

Additional information and a booklet describing the program may be secured from the Director, Cooperative Education, Auburn University, Auburn, Alabama 36830.

University Regulations

Academic Regulations

Students pursuing academic programs must comply with regulations and follow procedures prescribed by the University. Regulations relating to registration, class attendance, physical education, military training, grading system, examinations, degree requirements, honors, and other academic matters are presented in the following pages.

Class Enrollment And Attendance

General Requirements

Class Attendance. Students are expected to attend punctually all lecture and laboratory sessions in the courses for which they are registered beginning with the first session following registration. Exceptions may be made by individual instructors (See "Rules and Regulations for Students" in the *Tiger Cub* for detailed regulations.)

Registration. The orientation of new freshmen and registration of new and previously enrolled students will be held each quarter as indicated in the University Calendar. A service charge will be made for registration after the official dates listed in the University Calendar. (See section on Fees and Charges, page 29.)

Every student is required to be registered in Auburn University in his quarter of graduation or in any other quarter when, in clearing an "incomplete" grade, working on a graduate thesis, or engaged in any other endeavor relating to his normal progress as a student, he makes use of the instructional staff and the facilities of the University. A fee is charged for such late registration. (See page 30.) Registration in a correspondence course through Auburn University satisfies this requirement.

Re-admission of Former Students. Students who have attended Auburn University and desire to re-enter must secure a registration permit from the Registrar's Office. Students who have attended another institution for one (1) quarter or semester must be eligible to re-enter the institution attended. Students attending another institution for more than one (1) quarter or semester must also have earned an overall "C" average to be eligible to re-enter Auburn University. Two (2) transcripts must be furnished to the Registrar's office from the institution attended.

Late Enrollment. After the date specified in the University Calendar as the last day for final registration, no student may register except by permission of the dean. The load of a student who registers late shall be reduced at the discretion of his dean and an extra service charge will be made. No student will be registered after the tenth day of classes. (See page 30.)

Back Work. In arranging a student's work for each year the dean will require him to schedule first the back work of the lower class or classes, but

where this would work a serious hardship on the student the dean may make such exceptions as he deems necessary.

Prerequisites. Prerequisite or corequisite requirements of courses are listed with the course descriptions in the University catalog. It is the responsibility of the student to know these requirements and to comply with them when registering.

Any waiver of these requirements must be approved by the instructor concerned or his department head. In addition the waiver of the junior standing prerequisite established for courses that may be taken for graduate credit must have the approval of the Dean of the Graduate School.

Satisfactory - Unsatisfactory (S-U) Grading Option — With the approval of his advisor and dean, a student may schedule a course under the S-U option if he has junior or senior standing, has a cumulative grade point average of 1.5 or better on a 3.0 scale, and has earned at least 30 hours of credit at Auburn University.

A student may not elect the S-U option for courses required in the freshman or sophomore years of his curriculum, courses constituting the major as defined by his curriculum, courses approved in the catalog as not eligible for election of the S-U option, or courses for which a conventional grade has been recorded.

A total of 20 credits may be earned on the S-U option at the rate of one course per quarter. The grade for a course taken under the option shall be recorded on the student's permanent record as an "S" or "U". S and U grades shall not be considered in the determination of grade point averages; however, the student should be aware that an S grade could only be interpreted as a grade of D or better and a U grade as a failure.

A grade of IN, X, FA, W, or WF may be assigned in a course under the S-U option. If the grade of IN or X is cleared, the grade recorded on the student's permanent record shall be an S or a U. A grade of FA, W, WF, an uncleared IN, or an uncleared X shall have its usual meaning.

A student who has received an S grade in a course and later changes his curriculum shall receive credit for the course in his new curriculum provided credit is normally accepted in the curriculum for the course.

A student who elects a course under the S-U option shall receive the same consideration, and assume the same responsibilities, in the course as any other student who elects the course. Courses may be elected under the S-U option without the prerequisites or the corequisites for the course, but the student should be advised that he may be placing himself under a severe handicap by taking a course under these conditions.

After the close of the schedule adjustment period there shall be no change in the mode of grading (from S-U basis to the conventional basis or vice versa) of any student in any course.

Student Load. The maximum load for students enrolled in undergraduate curricula is 19 quarter hours. A normal quarterly load is from 15 to 19 hours. Upon approval of his dean, a student may schedule less than a normal load.

The maximum load may be exceeded only under the following circumstances:

- (a) The academic dean may approve up to 20 hours as a "convenient load."

- (b) Upon approval of his dean, a student may schedule an overload not to exceed 23 hours if, during his last residence quarter at Auburn University in which he carried 15 or more hours, he passed all work attempted and earned a grade point quotient of 1.5 or higher. A student who has scheduled fewer than 15 hours during an intervening quarter (or quarters) will retain the overload privilege if he has passed all work carried with a minimum grade point average of 1.5 in each intervening quarter. In special cases the dean may make exceptions to the 1.5 requirement by written notice to the Registrar.
- (c) Upon approval of his dean, a graduating senior who is ineligible to carry an overload may schedule a maximum of 23 hours if the overload will allow him to graduate in that particular quarter.

A student who registers for work in excess of his approved load may be required by his dean to drop the overload during the Schedule Adjustment Period.

Change in Program. A student is required to have approval of his dean before changing his program of studies. A fee (see page 31) will be charged for each change in schedule and for change in curriculum after the schedule adjustment period ends when such changes are not required or advised by the University.

No penalty shall be assigned for a course dropped on or before the 15th class day of the quarter. (For courses with fewer than 5 meetings per week, 15 class days should not be confused with 15 class meetings.)

If a course is dropped after the first 15 days, but before mid-quarter, the instructor shall assign a grade of *W* (passing), or *WF* (failing) as the case may be.

A course can be dropped after mid-quarter only under unusual circumstances. When approval is granted by the student's dean for dropping the course under such circumstances, a *W* may be assigned only when the instructor indicates that the student is clearly passing the course; otherwise a grade of *WF* is assigned.

A student's dean may make such substitutions as he deems necessary in the student's course of study. The student's load may also be reduced by the dean when circumstances seem to make it advisable.

Classification. Each undergraduate student will be classified according to the number of quarter credit hours he has earned at Auburn University and other institutions as follows: Freshman, 47 or fewer; Sophomore, 48 to 98; Junior, 99 to 152; Senior, 153 or over.

A student who has been awarded one baccalaureate degree and pursues another course for a second baccalaureate degree will be classified as an undergraduate student.

Students who for reasons acceptable to the dean do not wish to pursue regular courses either as to load or curriculum will be registered as unclassified students.

Auditing Privilege. Because of heavy enrollment in most academic departments, the privilege of auditing courses is restricted. Auditing of a lecture course or the lecture part of a combined lecture and laboratory course may be granted with the approval of the student's dean and the head of the department in which the course is offered. The auditing privilege is rarely permitted in laboratory or combined lecture and laboratory courses.

Auditors must complete the regular registration process and are listed on class rolls, but are not required to participate in classroom discussions, take tests or final examinations, or make reports; no grades or credits may be received. Auditors who have not been admitted to the University must make application to, and secure a registration permit from, the Admissions Office. Former students secure a registration permit from the Registrar's Office. Auditors who are not regularly enrolled students will register on the last day of the final registration period. A fee (see Auditing Fee on page 31) will be charged for auditing a lecture course. Regularly enrolled students carrying 10 hours or more and members of the faculty may audit lecture courses, without payment of the auditing fee with approval of the head of the department in which the course is offered and with the individual dean; however, the regular registration process must be completed.

Curriculum Transfer. If a student transfers from one curriculum to another requiring more hours, the graduation requirements of the new curriculum must be met as far as hours and subject matter are concerned.

Resignation. After the date carried in the University Calendar for mid-quarter, no student may resign from school and escape the penalty of failure. After this date, the dean shall contact the student's instructors to determine his scholastic standing at the time of resignation and report such standing to the Registrar. If the student is failing in over half his work, the number of hours reported as failing will be counted as credit hours attempted and included in academic eligibility calculations. Furthermore, when a student's total hours attempted exceed grade points earned by more than 21 at the end of his last quarter in residence prior to his resignation, the student's grades will be reviewed by his dean to determine if he has a "C" average for the quarter in which he is resigning. If the student does not have a "C" average, he will be placed on academic suspension.

When a student through illness or physical disability is forced to resign after mid-quarter, and when this condition has been the main factor in causing scholastic deficiencies, discretionary power in waiving the scholastic penalty shall rest with the student's dean.

English Requirements. All students are expected to maintain a reasonable standard of good English usage, oral and written. Instructors in all curricula are directed to insist on clear, effective, and accurate speaking and writing in all class work. No substitution for the freshman English requirement is permitted.

Credit in freshman English composition earned at another institution may be allowed on transfer as follows, except that no grade less than "C" will be accepted:

1. If the transfer student has fewer than three quarter hours of credit in freshman English composition, no credit is allowed. If he has three quarter hours credit in the first course of an English composition sequence, he must complete both EH 102 and 103.
2. If the transfer student has four quarter hours of credit in the first course of a three-course sequence he must complete EH 102 and 103.
3. If the transfer student has either four or five quarter hours of credit in the first course of a two-course sequence, he must complete EH 103.
4. If the transfer student has three semester hours of credit in the first course of a two-course sequence, he must complete EH 103.

5. If the transfer student has earned eight or more quarter hours and has met the first year English composition requirement of the other institution, credit may be allowed for EH 101-102-103, provided the minimum of eight hours involves no duplication. A total of 12 hours may be accepted toward the graduation requirement when the 12 hours of work represents a continuous course sequence at one school. Students entering an undergraduate school at Auburn University after receiving a bachelor's degree from another accredited college or university are excused from meeting these regulations.
6. No student failing a freshman English composition course at Auburn will be permitted to transfer credit from another school to offset that "F", but must repeat the course in residence at Auburn.

All transfer students are directed to clear their freshman English composition credits with the Registrar as soon as possible after enrolling at Auburn University.

Physical Education

University Requirements. Physical education is required for three (3) consecutive quarters. Only one credit per quarter is permitted or transferable to meet the three (3) quarter requirement.

Unless otherwise approved by the student's dean, each student who lacks physical education must register for an activity course in the first and succeeding quarters of residence until all requirements are met or until he becomes 26 years of age.

Transfer Students. Students transferring from an institution not requiring physical education will have their physical education requirements reduced by the number of full-time quarters (15 hours credit per quarter) in residence at the former institution. Students who transfer from an institution requiring physical education will have their physical education requirements reduced by the number of quarters of physical education completed at the former institution. Students who have not fulfilled the requirements in physical education at their previous institution will be required to do so at Auburn University before graduation.

Health Classification. A medical examination is required of all students before being admitted to classes. A card stating the physical condition of each student must be filed in the Infirmary and the Department of Health, Physical Education and Recreation before assignment of activities can be approved. Classifications are:

- (A) Regular — This classification permits the student to engage in any activity offered by the Department.
- (B) Adapted — This classification provides for the student with physical limitations which may restrict his participation in the regular program of activities.
- (C) This classification provides for the student with physical limitations requiring program adaptation to his individual needs.

Military Service Information

Reserve Officers Training Corps

Three Military Services — Army, Navy, and Air Force — are represented by ROTC Units at Auburn. Entering freshmen may elect to participate in the

ROTC program and may enroll in the ROTC of their choice at registration, subject to class capacities. Students enrolled in Naval ROTC and/or those under financial assistance programs are selected by the Department concerned prior to registration.

Military Training. Auburn University has traditionally fielded an impressive Corps of ROTC cadets. These cadets have distinguished themselves and gained recognition for Auburn University through their accomplishments in military activities while at the University and through illustrious military service.

Upon completion of the two year basic program, qualified students may pursue an officer's commission through the advanced ROTC program. Individuals completing the ROTC program will be commissioned at the time of graduation and when called to active duty will serve as officers in their branch of service.

Eligibility for enrollment in the Advanced Course of Army or Air Force ROTC will be subject to departmental policies, criteria, and quota limitations. The Naval ROTC is a four-year officer candidate program and students selected for this program retain their eligibility as officer candidates unless disenrolled prior to commissioning.

Any student with previous military service who is interested in the Advanced Course offered by the Army or Air Force shall complete as much of the Basic ROTC Course as may be prescribed by the Department concerned. A summer field training period may be completed in lieu of the two-year ROTC program normally taken by freshmen and sophomores who plan to enroll in the Advanced Course.

Academic Credit. One credit hour is granted by the University for completion of each quarter of Army and Air Force basic ROTC and the sophomore Naval ROTC courses. Three credit hours per course are granted for completion of Army and Air Force Advanced ROTC and the freshman, junior, and senior Naval ROTC courses. However, only 12 credit hours of ROTC may be applied toward the total credits required for graduation.

Military Service Credit. Applicants who have served in the Armed Forces, upon submitting to the Registrar the official separation form (DD Form 214), may be allowed credit toward advanced standing for service experience as follows:

(1) Courses completed in military service programs at the college level insofar as they fit into the student's curriculum as required subjects or as electives, as approved by the dean concerned.

(2) Special service training not strictly organized as college courses, and other formal or informal off-duty training. Credit may be allowed toward advanced standing by the dean after review by the Registrar and the dean concerned of the official separation record and, as required, after passing with satisfactory scores or grades any field or subject examinations given through the Armed Forces Institute or by the department concerned. Credit for college level General Educational Development Tests is allowed as approved by the dean concerned, except that no credit is allowed in English.

(3) Correspondence courses. Credit may be allowed for college level courses completed by correspondence through the Armed Forces Institute, institutions approved by the Armed Forces Institute, and other accredited institutions as approved by the dean concerned.

(4) Students who have had active military service may receive credit in physical education as follows: for less than six months, no credit; for six months to one year, one quarter hour in Foundations of Physical Education, HPR 101; for more than one year, two (2) quarter hours (less any completed prior to military service) plus one (1) quarter hour in swimming if the student passes the departmental proficiency test.

Selective Service Deferments. For regulations concerning Selective Service deferment based on enrollment in ROTC programs, contact the military department concerned.

Examinations And Grades

Grading System

Final grades are assigned as follows: A, Superior; B, Good; C, Acceptable; D, Passing; S, Satisfactory; U, Unsatisfactory; F, Failure. Grade points are assigned as follows: A — 3; B — 2; C — 1; D — 0; F — 0. For graduate students see Graduate School section.

A grade of "Incomplete" (IN) is assigned when the quality of work has been of passing grade, but the student has been prevented by illness or other justifiable cause from completing the work required prior to the final examination. If the student is both "Incomplete" in his work and absent from the final examination, the grade of "Absent Examination" (X) shall be assigned. When a grade of "Absent Examination" (X) is reported, the instructor shall indicate whether or not the quality of work has been of passing grade. If passing, a grade of "X" is assigned; if not passing, the grade shall be "XF." Grades of "Incomplete" and "Absent Examination" in required subjects not cleared within one resident quarter shall be repeated. Graduating seniors must clear all incompletes (IN) and absent examination (X) within the first two (2) weeks of their graduating quarter. Graduate students shall remove incomplete grades within a reasonable time and will not be allowed to graduate with grades of "Incomplete" on their records. A student absent from a final examination for any reason other than personal illness must obtain an excuse from the respective dean in order to take the examination.

A grade of "Withdrawn" (W) will be assigned when the student drops a course with the permission of the dean within the first three weeks of a quarter, or when he is permitted because of unusual circumstances to drop the course without penalty after this period. A grade of "Withdrawn Failing" (WF) is assigned to a course dropped with penalty.

If a student is dropped for excessive absences, a grade of "FA" is assigned. (See *Tiger Cub* for detailed regulations concerning the "FA" grade.)

Examinations and Reports

Examinations are classified as (1) final examinations at the end of each quarter and (2) special examinations. Grades in all subjects are reported to the student's parents or guardians at the end of each quarter. Fees for special examinations are found on page 32. A student absent from an examination for any reason other than personal illness must obtain an excuse from the respective dean in order to take the examination. Examinations missed because of illness must be excused by the University Physician.

For detailed regulations governing special examinations, see "Rules and Regulations for Students" in *The Tiger Cub*, the student handbook.

Announced Quizzes. At least two announced one-hour quizzes shall be held in each subject during the quarter, one in the first half of the quarter and the other in the last half. Other quizzes may be given as deemed necessary by the instructor and department head.

Mid-Quarter Deficiencies. Deficiencies are reported at the end of the fifth week in each quarter.

Dean's List

A full-time student (minimum of 15 quarter hours) passing all credit hours of work carried during a quarter and attaining a scholastic record within the upper five per cent of the records attained by the full-time students enrolled in his school may be designated an honor student for that quarter. The honor attained will be recorded on the Dean's List and on the student's permanent record.

Academic Eligibility

Continued Residence

Auburn University may place a student on probation or suspend him at any time if he flagrantly neglects his academic work or makes unsatisfactory progress toward graduation.

Academic Probation

Any student enrolled at Auburn University will be placed on academic probation whenever the total number of hours he has attempted at Auburn University exceeds total grade points earned by more than 12, except that no entering freshman will be placed on academic probation on the basis of his first quarter's work at Auburn.

Clearing Probation

A student may clear a probation by reducing his grade point deficiency to 12 or fewer grade points.

Academic Suspension

A student on probation will be placed on academic suspension for two quarters whenever the number of hours he has attempted at Auburn University exceeds grade points earned by more than 21. However, such a student will not be placed on academic suspension at the end of a quarter in which he earns a 1.0 (C) average, but he will be continued on academic probation.

A student's first academic suspension will be for a period of two quarters, summer quarter being counted as any other quarter. A student will be re-admitted on academic probation following the expiration of his first suspension. A student who incurs a second academic suspension is placed on indefinite suspension and can be re-admitted only on special approval by the Admissions Committee on the basis of adequate evidence of ability, maturity and motiva-

tion. Generally, a student must be on indefinite suspension at least four quarters before his application for re-admission will be considered.

A student whose eligibility to register cannot be determined because of deferred grades may be permitted to register conditionally until his status is determined. Conditional grades must be cleared within two weeks of the beginning of the quarter.

No credit earned at another institution by a student on academic suspension from Auburn will be used in clearing a suspension or in meeting requirements for an Auburn University degree.

Suspensions incurred prior to implementation of the above regulations shall not be counted when determining a student's academic status.

A student who resigns after mid-quarter may be subject to academic suspension. (See "Resignation" on page 33 for further information.)

Students enrolled in the School of Veterinary Medicine who fail to make a grade point average of 1.25 in any quarter will be placed on academic probation. Students on academic probation who fail to make a 1.25 in the following quarter may be dropped from the School of Veterinary Medicine. Students who make a grade of F on any course may be required to withdraw from the School of Veterinary Medicine. If re-admitted such students may be required to repeat certain other courses in the curriculum for that quarter.

Students who are dropped under the above provisions are eligible for admission to other curricula provided they meet the general scholastic requirements for continuance in college. The scholastic penalties incurred while enrolled in the School of Veterinary Medicine will become a part of the student's record.

Degree Requirements

To qualify for graduation, a student must complete the courses and hours specifically required and accepted for his curriculum with a grade point average of 1.0 (C). A student who transfers from another institution must earn grade points equal in number to the additional hours required at Auburn University for completion of the curriculum. If courses by correspondence and extension are accepted, the number of grade points allowed will not exceed the number of credit hours so completed.

Not more than 10 quarter hours of the final year's work may be obtained through extension or correspondence courses, or both, unless the student has completed a full load in residence previously for one full session of 36 weeks, in which case credit will be allowed for a total of 18 quarter hours in either extension or correspondence, or a combination of the two. All credit hours earned by correspondence or extension will be counted as any other credit hours earned toward meeting graduation requirements but will not be included in the calculation for continuation in residence.

Degrees are conferred at Commencement Exercises held at the close of each quarter. A degree will not be conferred in absentia without official permission of the student's dean.

The graduation fee (page 31) must be paid at the beginning of the quarter of graduation at the Bursar's Office.

No student will be issued a diploma or statement of credits if he is in default on any payment due the University or any school or division thereof.

Residence Requirement. To obtain a bachelor's degree from Auburn University, a student must earn a minimum of 45 hours in residence at the institution. As a general rule, the 45 hours must be taken during his final year and in the school or curriculum of graduation. However, the student's dean may waive the final year's residence in a specific school or curriculum and may also approve up to 20 hours earned elsewhere during his final year. In any case the student must complete a total of 45 hours in residence at Auburn University.

Second Degree. A minimum of 45 quarter hours and 45 grade points and 36 weeks of residence is required for a second baccalaureate degree by a graduate of Auburn University. The minimum requirements for a second baccalaureate degree for a graduate of another institution are completion of the hours required in the final year of the curriculum with an equal number of grade points and 36 weeks of residence at this institution. A minimum of 45 quarter hours and 36 weeks of residence is required for a master's degree.

Off-Campus Credit

Extension and Correspondence Courses

The following regulations govern extension and correspondence courses: (1) Credit for undergraduate courses in extension and/or correspondence in the major subject or for requirements for the baccalaureate degree shall not exceed, including transfer credits so earned, 10 per cent of the total credit required. (2) Credit hours earned by correspondence or extension will be counted as any other credit hours earned toward meeting the requirements for graduation, but will not be included in the calculation for continuation-in-residence. Grade points will be assigned to such work toward meeting the requirements for graduation, but in no case will the number of grade points exceed the number of credit hours so earned. (3) Credit for extension and correspondence courses to be taken at Auburn or elsewhere must be approved in advance by the student's dean. (4) No student in residence may enroll for a correspondence course if he can schedule the course or a suitable substitute. (5) No student shall receive credit for correspondence work which, with courses taken in residence, makes a total load exceeding the maximum allowed under college regulations.

In addition to the above, students taking work under the Auburn University Correspondence Study Program are subject also to its regulations as outlined on page 43. For further information, course listing, and application form request a Correspondence Study Bulletin from the Director, Correspondence Study Program, School of Education, Auburn University.

Off-Campus Center Credit

Permission to take work at a university off-campus center other than at Auburn University-Montgomery is at the discretion of the dean and within the established relationships between the center and the comparable school or college in the parent university of the center. It shall be the responsibility of the student to secure and file with his dean a statement from the center that he may use credit in the desired course toward meeting requirements for the appropriate degree assuming his enrollment at the parent university under comparable classification and circumstances.

Graduation Honors

Students clearing graduation requirements with exceptionally high scholastic records who have completed in residence at Auburn University not less than six quarters of the work required in their curricula are graduated with distinction. The distinction attained will be recorded on the student's diploma and placed on his permanent record.

A transfer student who has completed at least six quarters of work in residence at Auburn University is eligible for graduation honors if he meets both of the following requirements: (1) his grade point quotient on all work taken in residence at Auburn University meets the minimum requirements for the honor and (2) his over-all grade point quotient on all work taken in residence at Auburn University and elsewhere meets the minimum requirements for the honor.

A transfer student may not be graduated with a degree of distinction higher than that for which he would be eligible on the basis of his Auburn University record, and where his over-all average is lower than his Auburn University record, the degree of distinction earned will be determined by his over-all grade point quotient.

A student whose record at Auburn University fails to meet the requirements established for one of the degrees of distinction may not be graduated with honors regardless of his record elsewhere.

In determining graduation honors, all work attempted in residence except remedial subjects and subjects cleared with the "S" (satisfactory) grade, will be used in the calculations. Where transfer credits are considered, calculations will be based on the grade point values in use at Auburn University.

The grades of distinction and requirements are: With Honor, a grade point quotient of at least 2.4; With High Honor, a grade point quotient of at least 2.6; and With Highest Honor, a grade point quotient of at least 2.8.

Special Regulations

For complete information regarding all Special Regulations, see "Rules and Regulations for Students" in *The Tiger Cub*, the student handbook.

Automobile Registration

Registration of four-wheel motor vehicles will be a part of the academic registration procedure at the beginning of the Fall Quarter each year for all undergraduate and graduate students that are permitted to bring cars to Auburn and will be part of the registration procedure at the beginning of the Winter, Spring and Summer Quarters for all students not already registered.

Students who bring unregistered cars, scooters or motorcycles on the campus after any registration period must register them at the University Security Office, Department of Buildings and Grounds, immediately after arrival on the campus. Faculty and staff members shall register their cars at the University Security Office. Failure to register a four-wheel vehicle, to use the proper decal and to park in the proper zone will constitute a violation and subject the violator to certain penalties.

Freshmen are not permitted to bring cars to the Auburn Community unless required for commuting. Generally, those staying or living one-half mile or farther beyond the edge of the main campus will be considered commuters.

Junior, Sophomore and Freshman commuters must register for zone "D" and are not permitted to park or operate a vehicle on the main campus during normal school hours.

The above is general information subject to modification by the beginning of the Fall Quarter, 1970. For specific up-to-date information regarding designated parking area, traffic regulations and controls, violations and penalties, secure a copy of the "Parking and Traffic Regulations" from the University Security Office.

Discipline

1. Each student, by act of registration, accepts an obligation to obey all rules and regulations.

2. Students are expected to conduct themselves along the lines of good citizenship by obeying the laws of the United States, the State of Alabama, the City of Auburn, and the University. Enrollment as a student in no way exempts any person from penalty in case of violation of local, state or national laws. (See Student Handbook for detailed regulations relative to discipline.)

3. All publications supported by the Student Activities Fee are subject to supervision by the Board of Student Publications.

The University Liberal Education Program

AS STATED on page 9 of the catalog, the University's undergraduate instructional program requires that each student complete a component of general studies in addition to the requirements of his School or departmental major. This component is divided into a "foundation year" of coursework in English composition, world history, natural science, mathematics or logic, and physical education, and is to be taken during the lower-division years, primarily at the freshman level. A certain number of hours must also be completed in elective courses lying outside the student's major area; these are to be completed, in part at least, during the upper-division years.

The goals of this "experience in breadth" are to some extent intangible: the development in the student of the values of tolerance, intellectual honesty, and a capacity for reflective judgment. More specifically, it is hoped that the student will acquire also an ability to order his thoughts in a clearly expressed and reasoned manner; attain a grasp of the scientific method and discipline; develop some understanding of his culture and its backgrounds; and come to perceive the vital issues of our common life as citizens in a complex and changing world.

The minimal University requirements for all students are listed below; however, individual Schools and departments may increase the number of hours in this component of their undergraduate programs, and the student should consult the appropriate curriculum model in his School for complete requirements.

Requirement	Hours	Option
English Composition EH 101-2-3 (3-3-3)	9	None
World History HY 101-2-3 (3-3-3)	9	None
Natural Science	minimum of 10	Biology 101-2-3 (5-5-5) 101-4 (5-5) Chemistry 103-4 (5-5), 101-102-104 (2-3-5) Geology 101-2 (5-5) Physics 220-1-2 (4-4-4) 204-5-6 (5-5-5)
Mathematics or Philosophy	minimum of 5	Mathematics 100 (5), 159-161 (5-5), 160-161 (5-5) Philosophy 202 (5), 210 (3), 211-212 (3-3), 214 (3), 216 (3).
Physical Education	3	See p. 257 for the various options for meeting this retirement offered by the Department of Health, Physical Education and Recreation.
Electives	minimum of 20	A minimum of 20 additional hours of liberal education studies are to be taken by each student; these will consist of course-work in two broad academic areas other than that in which his own major field lies (Humanities and Fine Arts, Social Sciences, Mathematics and Natural Science), with no less than one course in each area.

School of Agriculture

E. V. SMITH, *Dean*

CHARLES F. SIMMONS, *Associate Dean*

R. D. ROUSE, *Assistant Dean*

THE SCHOOL OF AGRICULTURE prepares students for careers in agriculture and related professions. Courses provide a broad foundation in the basic sciences, a general knowledge of the applied sciences, and a reasonable number of cultural subjects. Most of the basic science courses are given in the freshman and sophomore years and serve as a basis for a better understanding of the applied or more practical subjects which are usually taken in the junior and senior years.

A curriculum is offered in Agricultural Science with majors in Agronomy and Soils, Animal Science, Dairy Science, Poultry Science, Horticulture, and Agricultural Journalism. Other curricula are offered in Agricultural Business and Economics; Agricultural Engineering; Biological Sciences, with majors in Botany, Fisheries Management, Wildlife Management, Entomology, Zoology, and Marine Biology; Food Science; Forest Management; Ornamental Horticulture; and Wood Technology. If a student is permitted to major in a field where the courses are not prescribed in the catalog he should consult with the head of the department concerned.

The School of Agriculture also furnishes the subject matter training in Agriculture for the curriculum for training teachers of Vocational Agriculture.

Transfer credit will not normally be allowed for any course passed with a grade lower than C at any other college or university.

Only on the basis of validating examinations by the student will transfer credit in agriculture subjects be accepted from colleges where instruction in these subjects is usually done by faculty members who do not hold graduate degrees in the major area of their instructional responsibilities. Arrangements for validating examinations must be made with the Dean of Agriculture in the first quarter of the student's enrollment in the School of Agriculture at Auburn and the examinations must be completed before the middle of the second quarter.

Curriculum in Agricultural Science (AG)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
BI 101 Prin. of Biology	5	BI 102 Gen. Plant Biology	5	CH 104 Fund. Chem. II	4
EH 101 English Composition	3	CH 103 Fund. Chem. I	4	CH 104L Chemistry Lab.	1
HY 101 World History	3	CH 103L Chemistry Lab.	1	EH 103 English Composition	3
*MH 160 Algebra & Trig.	5	EH 102 English Comp.	3	HY 103 World History	3
†Basic ROTC	1	HY 102 World History	3	MH 161 An. Geom. & Cal.	5
		†Basic ROTC	1	†Basic ROTC	1

SOPHOMORE YEAR

AH 200 Intr. An. Husb.	5	AS 202 Agr. Economics	5	AH 204 An. Biochem. & Nutr.	5
BI 103 Gen. An. Biology	5	CH 207 Organic Chemistry	5	AY 201 Prin. Grain Prod'n.	5
PS 204 Found. of Physics	5	HF 201 Orchard Mgt.	5	DH 200 Fund. of Dairying	5
†Basic ROTC	1	†Basic ROTC	1	†Basic ROTC	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

JUNIOR YEAR

First Quarter		Second Quarter		Third Quarter	
PH 301 Gen. Poultry	5	BY 306 Fund. Plant Phys.	5	AY 304 General Soils	5
SP 202 App. Oral Comm.	3	BY 309 Gen. Plant Path.	5	HF 308 Veg. Crops	5
**Agr. Eng. Elective	5	JM 315 Agr. Journalism	3	**Agr. Eng. Elective	5
Elective	5	Elective	5	Elective	3

SENIOR YEAR

AY 401 Prin. Forage Prod.	5	AS 301 Agr. Marketing	5	AH 401 Swine Production	5
FY 313 Farm Forestry	5	AY 404 Fiber & Oil Crops	5	AS 401 Farm Management	5
Elective	5	Elective	5	ZY 402 Econ. Entomology	5
Elective	3	Elective	3	Elective	3

Total — 210 quarter hours

*Credit toward a degree in any curriculum in the School of Agriculture will not be allowed for a mathematics course at a level lower than that specified in the curriculum. However, students who are not prepared to take the prescribed courses may take a lower level course without degree credit.

**To be selected from AN 350, 351, 352, and 353.

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Agronomy and Soils

This major is for those students interested in the crop or soil sciences. For students with a keen interest in biology, chemistry, physics or earth sciences, Agronomy offers a great opportunity to pursue further these inclinations and abilities. With the rapid increase of the world's population and the accompanying world-wide demand for more food and fiber, the crop and soil sciences are now even more important than ever before.

Courses are designed to prepare Agronomy graduates for several major areas of endeavor: (1) the chemical industry, producers of fertilizer, herbicides, and other agricultural chemicals; (2) farm-advisory agencies such as soil-testing laboratories and other private consultants; (3) public farm-advisory agencies such as the Agricultural Extension Service of the Soil Conservation Service; (4) research agencies of corporations, U.S. Department of Agriculture, colleges and universities, and State Agricultural Experiment Stations.

Major in Agronomy and Soils (AY)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 103 Gen. Chem.	4	BI 101 Prin. of Biology	5	BI 102 Plant Biology	5
CH 103L Gen. Chem. Lab.	1	CH 104 Gen. Chem.	4	MH 161 An. Geom. & Cal.	5
MH 160 Alg. and Trig.	5	CH 104L Gen. Chem. Lab.	1	HY 103 World History	3
HY 101 World History	3	HY 102 World History	3	EH 103 English Comp.	3
EH 101 English Comp.	3	EH 102 English Comp.	3	†Basic ROTC	1
†Basic ROTC	1	†Basic ROTC	1		

SOPHOMORE YEAR

AY 201 Prin. of Grain Prod.	5	AH 204 An. Biochem. and Nutrition	5	PS 204 Physics	5
BI 103 Animal Biology	5	CH 208 Organic Chemistry	5	AH 200 Intr. An. Husb.	
CH 207 Organic Chem.	5	GL 101 Geology	5	DH 200 Dairying	5
†Basic ROTC	1	†Basic ROTC	1	AY 304 Gen. Soils	5
PE Physical Education	1	PE Physical Education	1	†Basic ROTC	1
				PE Physical Education	1

JUNIOR YEAR

AN 350 Soil & Water Tech.	5	AY 406 Com. Fertilizers	3	ZY 300 Genetics	5
AS 202 Agricultural Economics	5	HF 308 Vegetable Crops	5	AY 306 Soil Morphology & Survey	5
BY 306 Fund. of Plant Physiology	5	*Elective	10	JM 315 Agr. Journalism	3
SP 202 App. Oral Comm.	5			Elective	5

First Quarter			SENIOR YEAR		Third Quarter			
			Second Quarter					
AS 401	Farm Mgt.	5	AY 404	Fiber and Oil Crops	5	AY 402	Soil Fertility	5
AY 401	Prin. of Forage Prod.	5	BY 309	Plant Pathology	5	ZY 402	Econ. Ent.	5
FY 313	Farm Forestry	5		Elective	8		Elective	8
	Elective	3						

Total — 210 quarter hours

*The student must take at least 5 hours from AN 351, 352, 353, and 354, and 9 hours of electives must come from Humanities and Fine Arts, and Social Sciences.

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Major in Animal Science (AH)

FRESHMAN YEAR											
First Quarter				Second Quarter				Third Quarter			
AH 200 Intr. An. Husb. _____ 5				CH 104 Fund. of Chem. II _____ 4				BI 101 Prin. of Biology _____ 5			
CH 103 Fund. of Chem. I _____ 4				CH 104L Chemistry Lab. _____ 1				CH 207 Organic Chem. _____ 5			
CH 103L Chemistry Lab. _____ 1				FH 101 English Comp. _____ 3				EH 102 English Comp. _____ 3			
MH 160 Alg. & Trig. _____ 5				HY 101 World History _____ 3				HY 102 World History _____ 3			
†Basic ROTC _____ 1				MH 161 An. Geom. & Cal. _____ 5				†Basic ROTC _____ 1			
PE Physical Education _____ 1				†Basic ROTC _____ 1				PE Physical Education _____ 1			
				PE Physical Education _____ 1							

SOPHOMORE YEAR									
BI 102 Plant Biology	5	AH 204 Animal Biochem.		AH 309 Live An. Eval.	3				
CH 208 Organic Chemistry	5	& Nutr.	5	AS 202 Agr. Economics	5				
EH 103 English Comp.	3	BI 103 Anim. Biology	5	JM 315 Agr. Journalism	5				
HY 103 World History	3	PG 211 Psychology I	3	ZY 300 Genetics	5				
†Basic ROTC	1	SP 202 App. Oral Comm.	3	†Basic ROTC	1				
		†Basic ROTC	1						

JUNIOR YEAR								
AH 406	Anim. Reproduction	5	AH 403	Animal Breeding	5	VM 422	Anim. Disease Cont.	5
PS 204	Found. of Physics	5	AY 304	General Soils	5	ZY 402	Economic Ento.	5
VM 200	General Microbiol.	5	VM 421	Gen. An. Physiology	5		Electives	8
	Electives	3		Electives	3			

SENIOR YEAR							
AS 401	Farm Management	5	AH 408	Adv. An. Nutrition	5	Electives	18
	Electives	13	AH 411	Seminar	1		
				Electives	10		

Total — 210 quarter hours

Students desiring to major in Animal Science will be assigned an adviser. A major may elect either a Terminal Degree Option or a Graduate Preparatory Option and will during his sophomore year with the assistance and approval of his adviser, develop a plan of study for the junior and senior years from lists of approved elective courses. As approved by the Dean of Agriculture and the student's adviser, substitutions may be permitted to meet specific needs of individual students.

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Major in Dairy Science (DH)

The Department of Dairy Science offers a program of study with two main options — Science and Production Technology. Students are encouraged to take the Science option if they anticipate the possibility of advanced study beyond the B.S. degree. Such advanced study is necessary in preparing for positions in teaching, extension education and research in universities and dairy-allied industries.

The option in Production Technology provides for a selection of courses important in modern, automated milk production operations, for positions as specialists with milk companies, feed companies, other allied industries and in preparation for foreign assignments in the area of animal food production. Faculty advisers of students choosing this option will recommend a proper balance of elective courses in economics and business and in technical agriculture.

FRESHMAN YEAR

First Quarter

EH 101 English Composition	3
HY 101 World History	3
CH 103 Fundamentals of Chem.	4
CH 103L Fund. of Chem. Lab.	1
MH 160 Algebra and Trig.	5
LY 101 Use of Library	1
†Basic ROTC	1

Second Quarter

EH 102 English Composition	3
HY 102 World History	3
CH 104 Fundamentals of Chem.	4
CH 104L Fund. of Chem. Lab.	1
MH 161 An. Geom. & Cal.	5
†Basic ROTC	1

Third Quarter

EH 103 English Composition	3
HY 103 World History	3
BI 101 Prin. of Biology	5
PG 211 Psychology I	3
PA 211 Intr. to Deductive Logic	3
†Basic ROTC	1

SOPHOMORE YEAR

BI 102 Gen. Plant Biology	5
AS 202 Agr. Economics	5
CH 203 Organic Chem.*	
or CH 207	5
†Basic ROTC	1
PE Physical Education	1

BI 103 Gen. Animal Biology	5
VM 200 Gen. Microbiology	5
JM 315 Agr. Journalism	3
†Basic ROTC	1
PE Physical Education	1
Elective	3

PS 204 Found. Physics	
or	
PS 205 Intr. Physics	5
AH 204 Animal Biochem. & Nutr.	5
EH 345 Business & Professional Writing	5
†Basic ROTC	1
PE Physical Education	1

JUNIOR YEAR

DH 200 Fundamentals of Dairying	5
SP 202 App. Oral Comm.	3
AY 304 General Soils	5
Recommended	
Elective*	5

DH 101 Man's Food	3
ZY 300 Genetics	5
VM 421 Animal Physiology	5
Recommended	
Elective*	3

DH 317 Dairy Cattle Feeding and Management	5
AY 401 Princ. Forage Prod'n.	5
SP 273 Group Problem Solving through Discussion	5
Recommended	
Electives*	3

SENIOR YEAR

AS 401 Farm Management	5
Recommended	
Electives*	13

DH 408 Processing Dairy Products	5
AH 403 Animal Breeding	5
DH 402 Artificial Insemination	3
Recommended	
Elective*	5

DH 410 Food Microbiology	5
Electives	12

Total — 210 quarter hours

*Students choosing the science option will be advised to take CH 207 instead of CH 203 and PS 205 instead of PS 204. Other recommended electives will include CH 105, CH 208, PS 206, and such courses as MH 162, ZY 301, ZY 409, and DH 401. The recommended electives for students interested in production technology will include such courses as DH 401, AS 301, AS 303, EC 211-212, EC 341, IE 301, and ZY 402.

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Major in Horticulture (HF)

FRESHMAN YEAR

First Quarter

EH 101 English Comp.	3
BI 101 Prin. of Biology	5
MH 160 Alg. and Trig.	5
HF 101 Intr. to Hort.	1
†Basic ROTC	1
PE Physical Education	1

Second Quarter

EH 102 English Comp.	3
BI 102 Gen. Plant Biology	5
HY 101 World History	3
CH 103 Fund. Chemistry	4
CH 103L Gen. Chemistry Lab.	1
†Basic ROTC	1
PE Physical Education	1

Third Quarter

EH 103 English Comp.	3
MH 161 An. Geom. & Cal.	5
HY 102 World History	3
CH 104 Fund. Chemistry	4
CH 104L Gen. Chem. Lab.	1
†Basic ROTC	1
PE Physical Education	1

SOPHOMORE YEAR

HY 103 World History	3
BI 103 Gen. Animal Biology	5
HF 221 Landscape Gardening	5
SP 202 App. Oral Comm.	3
†Basic ROTC	1

AS 202 Agr. Economics	5
HF 201 Orchard Mgt.	5
JM 315 Agr. Journalism	3
GL 342 Geology	3
†Basic ROTC	1

HF 224 Plant Propagation	5
CH 207 Organic Chemistry	5
PS 204 Foundations of Physics	5
†Basic ROTC	1

JUNIOR YEAR

ZY 300 Genetics	5
AN 350 Soil and Water Technology	5
RY 306 Fund. of Plant Physiology	5
Elective	3

HF 308 Vegetable Crops	5
AY 304 General Soils	5
AS 301 Agr. Marketing	5
Elective	3

BY 309 Plant Pathology	5
HF 401 Commercial Veg. Crops	3
AY 402 Soil Fertility	5
Elective	5

SENIOR YEAR

First Quarter		Second Quarter		Third Quarter	
HF 402	Storage, Packaging, and Marketing _____ 3	HF 406	Nut. Culture _____ 5	ZY 402	Economic Ento. _____ 5
HF 404	Fruit Growing _____ 5		Agr. Engineering _____ 5	HF 405	Small Fruits _____ 5
AS 401	Farm Management _____ 5		Elective _____ 5		Electives _____ 8
	Elective _____ 5		Electives _____ 8		

Total — 210 quarter hours

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Major in Poultry Science (PH)

A program is offered with the option of science or business. In most cases students anticipating study beyond the B. S. degree should choose electives for the science option. The electives in the business area provide the student opportunity to prepare for sales, service, and related agribusiness professions.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
MH 160	Algebra & Trig. _____ 5	EH 101	English Composition _____ 3	HY 101	World History _____ 3
CH 103	Fund. of Chem. I _____ 4	CH 104	Fund. of Chem. II _____ 4	EH 102	English Composition _____ 3
CH 103L	Fund. of Chem. Lab. _____ 1	CH 104L	Fund. of Chem. Lab. _____ 1	BI 103	Animal Biology _____ 5
BI 101	Prin. of Biology _____ 5	BI 102	Plant Biology _____ 5	GL 101	Int. Geology I _____ 5
†Basic ROTC	_____ 1	MH 161	An. Geom. & Cal. _____ 5	†Basic ROTC	_____ 1
PE	Physical Education _____ 1	†Basic ROTC	_____ 1		

SOPHOMORE YEAR

HY 102	World History _____ 3	HY 103	World History _____ 3	AH 204	An. Biochemistry & Nutrition _____ 5
EH 103	English Composition _____ 3	SP 202	App. Oral Comm. _____ 3	PS 204	Physics or _____ 5
PH 301	General Poultry _____ 5	AS 202	Agric. Economics _____ 5	PS 205	Physics* _____ 5
CH 207	Organic Chemistry _____ 5	VM 311	General Bacteriology _____ 5	PG 211	Psychology I _____ 3
†Basic ROTC	_____ 1	or		†Basic ROTC	_____ 1
PE	Physical Education _____ 1	VM 200	General Microbiology* _____ 5	Elective	_____ 3
		†Basic ROTC	_____ 1		
		PE	Physical Education _____ 1		

JUNIOR YEAR

PH 302	Poultry Meat Prod. _____ 3	RSY 361	Rural Sociology _____ 5	AS 301	Agri. Marketing _____ 5
EH 304	Technical Writing _____ 3	ZY 300	Genetics _____ 5	SP 273	Group Prob. Solv. through Discussion _____ 5
AY 304	General Soils _____ 5		Electives _____ 8	Electives	_____ 8
PA 211	Intr. to Deductive Logic _____ 3				
	Elective _____ 3				

SENIOR YEAR

PH 405	Poultry Feeding _____ 3	PH 408	Poultry Diseases & Parasites _____ 5	PH 411	Poultry Marketing _____ 3
ZY 402	Economic Entomology _____ 5	AS 401	Farm Management _____ 5	PH 404	Poultry Management _____ 5
	or _____ 5		Electives _____ 8	Electives	_____ 9
ZY 411	General Parasitology _____ 5				
	Electives _____ 8				

Total — 210 quarter hours

*Students choosing the science option should take VM 200 and PS 205 in order to further prepare for more work in these areas.

Of the 47 hours of electives 30 must be selected from the list of approved electives shown below.

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

APPROVED ELECTIVES

Business Option:		Science Option:	
AS 304	Agric. Finance _____ 3	BY 401	Biological Statistics _____ 5
AS 403	Agric. Prices _____ 3	CH 105	General Chemistry & Lab. _____ 5
AS 405	Agric. Policy _____ 3	CH 208	Organic Chemistry _____ 5
AS 410	Agric. Bus. Mgt. _____ 3	IE 301	Electronic Data Processing & Computer Programming _____ 5
AN 353	Farm Bldg. Tech. _____ 5	PH 406	Incubation & Brooding _____ 3
ACF 211	Intr. Accounting _____ 5	PH 407	Poultry Problems _____ 3
ACF 212	Intr. Accounting _____ 5	PH 409	Poultry Problems _____ 3
ACF 314	Income Tax Acct. _____ 5	PH 410	Poultry Breeding _____ 3
MT 333	Salesmanship _____ 3	PS 206	Intr. Physics _____ 5
MN 341	Business Law _____ 5		

EC 350 Labor Problems	5	ZY 301 Comparative Anatomy	5
EC 360 Money & Banking	5	ZY 302 Vertebrate Embryology	5
EC 446 Business Cycles	5	ZY 409 Histology	5
EC 463 Corp. Finance	5	ZY 424 Animal Physiology	5
EC 465 Public Finance	5	ZY 429 Quantitative Genetics	5
PH 406 Incubation & Brooding	3	FL 121-122 French	10
PH 407 Poultry Problems	3	FL 131-132 Spanish	10
PH 409 Poultry Problems	3	FL 151-152 German	10
PH 410 Poultry Breeding	3	FL 171-172 Russian	10
SP 270 Group Leadership	3		
SY 204 Social Behavior	5		
ZY 302 Vertebrate Embryology	5		
AH 401 Swine Production	5		
AH 402 Beef Cattle Production	5		
DH 101 Man's Food	3		

Agricultural Business and Economics

The curriculum in Agricultural Business and Economics is for both those students who plan a career in business closely related to agriculture, and for those interested in the economics of agricultural production and marketing and in public policies affecting agriculture. The curriculum is administered through a faculty advisory system wherein individual student programs of study are developed in accordance with individual student needs and interests. The need for broad training, rather than narrow specialization, is emphasized.

The curriculum not only combines both business and technical agricultural courses, but through selection of electives it provides an opportunity for students to emphasize training in agribusiness, in agricultural economics, in humanities, or in selected production fields. The curriculum leads to a degree of Bachelor of Science in Agricultural Business and Economics.

The demand for graduates who have both business and applied agricultural training is increasing. In both public and private agencies, increasing attention to rural economic and social problems points to enlarged opportunities for qualified workers in teaching, research, sales, public relations, services, administration, and private employment in these fields. By properly selecting electives, students may prepare themselves to become (1) owners or managers of firms that produce, process, or market agricultural products; (2) teachers, research workers, or educational workers in the field; (3) public officials in the capacity of farm management or marketing specialists, commodity analysts, market news reporters, inspectors, credit analysts, etc.; or (4) employees of business firms that handle agricultural products or that service agricultural production and marketing firms.

Curriculum in Agricultural Business and Economics (AS)

FRESHMAN YEAR

First Quarter	Second Quarter	Third Quarter
EH 101 English Comp. 3	EH 102 English Comp. 3	EH 102 English Comp. 3
MH 160 Algebra & Trig. 5	MH 161 An. Geom. & Cal. 5	CH 104 Fund. Chem. II 4
BI 101 Prin. of Biology 5	CH 103 Fund. Chem. I 4	CH 104L Gen. Chem. Lab. 1
HY 101 World History 3	CH 103L Gen. Chem. Lab. 1	BI 102 Plant Biology 5
PE Physical Education 1	HY 102 World History 3	HY 103 World History 3
†Basic ROTC 1	LY 101 Use of Library 1	PE Physical Education 1
	†Basic ROTC 1	†Basic ROTC 1

SOPHOMORE YEAR

AH 204 Animal Biochem. & Nutrition 5	EC 211 Intr. Accounting 5	SP 202 App. Oral Comm. 3
AS 202 Agr. Economics 5	PO 209 Intr. Am. Gov't 5	FC 274 Bus. & Econ. Stat. I 5
BI 103 Animal Biol. 5	PS 204 Foundations of Physics 5	EC 212 Intr. Accounting 5
PE Physical Education 1	†Basic ROTC 1	DH 200 Fund. of Dairy or
†Basic ROTC 1		PH 301 Gen. Poultry 5
		†Basic ROTC 1

JUNIOR YEAR

First Quarter		Second Quarter		Third Quarter	
AH 303 Livestock Prod.	5	AS 301 Agr. Marketing	5	AN 351 Agr. Mach. Tech.	5
AY 307 Gen. Soils	5	RSY 361 Rural Sociology	5	or*	
EH 345 Bus. and Prof.		MN 341 Business Law	5	EC 360 Money and Banking	5
Writing I	5	Elective	3	Electives	5
Elective	3				

SENIOR YEAR

EC 446 Bus. Cycles	5	AY 401 Forage Prod'n. or		AS 401 Farm Management	5
AS 410 Agr. Bus. Mgt.	3	AY 201 Grain Prod'n.	5	AS 405 Agr. Policy	3
Electives	10	FY 313 Farm Forestry	5	AS 490 Senior Seminar	1
		AS 403 Agr. Prices	3	Electives	8
		Electives	5		

Total — 210 quarter hours

‡Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

*AN 350, AN 352, AN 353 or AN 354 may be substituted.

RECOMMENDED ELECTIVES

Electives will be selected in consultation with faculty advisers based on student needs and interests. However, one elective course must be taken in each of two broad academic areas (humanities & fine arts, mathematics, and natural sciences).

Group 1

AH 302 Feeds & Feeding	3
AH 304 Meats	3
AN 350 Soil & Water Tech.	5
AN 351 Agr. Machinery Tech.	5
AN 352 Tractor & Engine Tech.	5
AN 353 Farm Bldg. Tech.	5
AN 354 Agr. Proces. Tech.	5
AY 404 Fiber & Oil Crops	5
AY 406 Comm. Fert.	3
AY 407 Soil Management	5
HF 308 Veg. Crops	5
HF 401 Comm. Veg. Crops	3

Group 2

AS 302 Farm Records	3
AS 303 Agricultural Coop.	3
AS 304 Agr. Finance	3
AS 305 Farm Appraisal	3
AS 409 Land Economics	5
AS 411 Econ. Development	3

AS 412 Economic Aspects of Water	5
EC 452 Comp. Econ. Systems	5
EC 464 Investments	5
EC 465 Public Finance	5
EC 474 Bus. and Econ. Stat. II	5

Group 3

RSY 362 Community Org.	5
RSY 461 Rural Social Org.	5
RSY 462 Sociology of Community Dev.	5
IE 301 Electronic Data Processing	5
PA 210 Intr. to Philosophy	3
PA 302 Intr. to Ethics	3
PG 211 Psychology I	3
PG 330 Social Psychology	4
PG 360 Fields of Prof. Psychology	5
PO 407 Political Science	5
SY 203 Cultural Anthropology	5
SY 408 Ind. Socio.	5
ZY 204 Insects	3

Agricultural Engineering

This technical field trains engineers in the agricultural areas. The curriculum includes courses basic to all types of engineering, courses with particular emphasis on engineering problems in agriculture, and general agricultural courses. The curriculum leads to a degree of Bachelor of Science in Agricultural Engineering. Students completing the curriculum have opportunities in many types of work where both engineering and agricultural knowledge are required.

The Agricultural Engineering curriculum is accredited by the Engineers' Council for Professional Development.

Curriculum in Agricultural Engineering (AN)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
MH 161 An. Geom. & Cal.	5	MH 162 An. Geom. & Cal.	5	MH 163 An. Geom. & Cal.	5
BI 101 Prin. of Biology	5	CH 103 Gen. Chem.	4	CH 104 Gen. Chem.	4
*EG 106 Graphical Methods	2	CH 103L Gen. Chem. Lab.	1	CH 104L Gen. Chem. Lab.	1
EH 101 English Comp.	3	BI 102 Plant Biology	5	EH 102 English Comp.	3
LY 101 Use of Library	1	PE Physical Education	1	HY 101 World History	3
PE Physical Education	1	‡Basic ROTC	1	PE Physical Education	1
‡Basic ROTC	1			‡Basic ROTC	1

SOPHOMORE YEAR

First Quarter		Second Quarter		Third Quarter	
MH 264 An. Geom. & Cal.	5	PS 221 Gen. Physics II	4	MH 265 Diff. Equat.	3
PS 220 Gen. Physics I	4	ME 202 Engr. Mat. Science	3	ME 301 Thermodynamics I	4
BI 103 Animal Biology	5	ME 207 Strength of Mat.	3	IE 205 Comp. & Info. Syst.	3
ME 205 Appl. Mech. Stat.	4	EH 103 English Comp.	3	ME 321 Dynamics I	4
‡Basic ROTC	1	HY 102 World History	3	PS 222 Gen. Physics III	4
		‡Basic ROTC	1	‡Basic ROTC	1

JUNIOR YEAR

EE 262 Elec. Circuits	3	AS 202 Agric. Econ.	5	EE 381 Elec. Magn. Devices	4
PS 320 Mod. Physics	3	EE 273 Elec. Devices	3	MH 362 Engr. Math I	3
AN 301 Mech. of Farm Mach.	3	AN 302 Mech. of Trac. Power	3	AN 306 Elec. Systems	3
AN 303 Soil & Water Engr. I	4	AN 304 Drain. & Irrig.	3	HY 103 World History	3
AN 307 Structures Des. I	3	AN 305 Agric. Proc. Engr.	3	Agric. Engr. Elective	3
ME 340 Fluid Mech.	3				

SENIOR YEAR

SP 202 App. Oral Comm.	3	PA 202 Ethics & Soc.	5	Engr. Electives	3
AY 307 Gen. Soils	5	Agric. Engr. Elective	3	Social & Hum. Elective	7
Engr. Electives	11	Engr. Electives	3	Agric. Electives	5
		Agric. Elective	5		

Total — 210 quarter hours

*Students who have not had a course in drawing will need to take EG 102 before taking EG 106.

‡Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

ELECTIVES

Engineering electives and Agricultural Engineering electives will be selected in consultation with the faculty adviser and will be subject to the approval of the Department Head. A minimum of six hours of Agricultural Engineering electives will be taken by each student. The elective selection is to be based on the student's area of interest or specialization.

Three hours of Advanced ROTC may be substituted for SP 202 Applied Oral Communication.

Requirements for agricultural electives may be met by taking 10 hours from the following: AY 455 Soil Physics, BY 401 Experimental Statistics for Biological Sciences, BY 306 Fundamentals of Plant Physiology, AS 401 Farm Management, ZY 402 Economic Entomology, AY 402 Soil Fertility, AH 204 Animal Biochemistry and Nutrition.

APPROVED HUMANISTIC-SOCIAL ELECTIVES

History and Government		Psychology	
HY 322 The U.S. in World Affairs	3	PG 211 General Psychology I	3
HY 371 History of the West	3	PG 461 Industrial Psychology	5
HY 460 Great Leaders of History	5		
HY Current Affairs	3		
PO 209 American Government	5		
Literature		APPROVED ENGINEERING ELECTIVES	
EH 320 An Introduction to Drama	3	AN 401 Agricultural Power and Machinery Design	3
EH 350 Shakespeare's Greatest Plays	3	AN 403 Soil & Water Engineering II	3
EH 365 Southern Literature	3	AN 405 Elec. & Processing Systems Design	3
EH 381 The Literature of the Age of Reason	3	AN 407 Agricultural Structures Design II	3
SP 310 Great American Speeches	3	AN 410 Design Problems	3
		AN 411 Design Problems	3
		ME 302 Thermodynamics II	3
		ME 316 Strength of Materials II	4
		ME 322 Dynamics II	4
		ME 341 Fluid Mechanics II	4
		ME 427 Mechanical Vibrations	4
		ME 421 Heat Transfer	4
		ME 428 Air Conditioning and Refrigeration	4
		ME 432 Automatic Controls	3
		ME 439 Mechanical Engr. Design I	4
		ME 440 Mechanical Engr. Design II	3
		ME 443 Photoelastic Stress and Strain An.	3
		CE 304 Theory of Structures I	5
		CE 305 Water Supply and Disposal Systems	5
		CE 308 Hydraulics	5
		CE 380 Theory of Structures II	5
		CE 402 Statically Indeterminate Structure	5
		CE 404 Reinforced Concrete	5
		CE 414 Structural Design	4
		CE 418 Soil Mechanics	5
		CE 423 Similitude in Engineering	3
		CE 408 Engineering Foundations	3
		CE 314 Photogeology for Engineers	5
		CE 411 Flow in Open Channels	5
		CE 412 Hydrology	5
		IE 211 Engineering Statistics I	3
		IE 320 Engineering Economy	5
The Arts			
AT 332 American Painting and Sculpture	3		
AT 431 Contemporary Art	3		
AR 360 Appreciation of Architecture	3		
TH 313 Theatre Appreciation I	3		
TH 314 Theatre Appreciation II	3		
MU 373 Appreciation of Music	3		
MU 374 Masterpiece of Music	3		
Economics and Geography			
EC 206 Socio-Economic Foundations of Contemporary America	3		
GY 301 Geo-Political Basis of World Powers	3		
GY 405 Cultural Geography of the World	5		
GY 407 World Resources & Their Utilization	5		
Sociology			
SY 201 Introduction to Sociology	5		
SY 204 Social Behavior	5		
SY 311 Technology and Social Change	3		
Philosophy and Religion			
PA 210 Introduction to Philosophy	3		
PA 302 Introduction to Ethics	3		
PA 330 Philosophy of Religion	5		
PA 440 American Philosophy	5		

Biological Sciences (BI)

Major in Botany

The Botany curriculum is designed for those students interested in the fundamental plant science part of the Life Sciences. The required courses in this curriculum are established to give the student knowledge of the basic nature of plants as a phase of general culture and as a basis for further study in the plant sciences. Through proper selection of electives students may prepare for careers in research, teaching extension, or agri-business activities.

The curriculum is administered through a faculty advisory system whereby a program of study may be developed in accordance with the interests and needs of each individual student. Thus, a student may specialize if desired in an area such as plant morphology, pathology, physiology, etc.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
BI 101 Prin. of Biology	5	BI 102 Gen. Pl. Biology	5	BI 103 Gen. Animal Bio.	5
MH 160 Algebra & Trig.	5	MH 161 An. Geom. & Cal.	5	CH 103 Fund. Chemistry I	4
EH 101 English Comp.	3	EH 102 English Comp.	3	CH 103L Gen. Chem. Lab.	1
HY 101 World History	3	HY 102 World History	3	EH 103 English Comp.	3
†Basic ROTC	1	LY 101 Use of Library	1	HY 103 World History	3
		†Basic ROTC	1	†Basic ROTC	1

SOPHOMORE YEAR

CH 104 Fund. Chemistry II	4	CH Org. Chem. Elective	5	CH Chemistry Elective	5
CH 104L Gen. Chem. Lab.	1	BY 309 Gen. Plant	5	VM 200 Gen. Microbiology	5
ZY 300 Genetics	5	Pathology	5	Elective	5
EC 200 Gen. Economics or		GL 101 Intr. Geology I	5	†Basic ROTC	1
AS 202 Agr. Economics	5	†Basic ROTC	1	PE Physical Education	1
†Basic ROTC	1	PE Physical Education	1		
PE Physical Education	1				

JUNIOR YEAR

PS 205 Intr. Physics	5	PS 206 Intr. Physics	5	BY 306 Fund. Plant	
SP 202 Appl. Oral Comm.	3	AY 304 General Soils	5	Physiology	5
PA 210 Intr. Philosophy	3	EH English Elective	3	ZY 304 Gen. Entomology	5
Elective	6	Elective	5	Electives	8

SENIOR YEAR

BY 413 Gen. Plant Ecology	5	BY 415 Plant Anatomy	5	BY 406 Systematic Botany	5
FL 121 Elem. French or		FL 122 Elem. French or		Electives	13
FL 151 Elem. German	5	FL 152 Elem. German	5		
Electives	8	Electives	8		

Total — 210 quarter hours

Students desiring to major in Botany will be assigned an adviser. A major will, during the sophomore year, with the assistance and approval of the adviser develop a plan of study for the junior and senior years from lists of approved elective courses. As approved by the Dean of Agriculture and the student's adviser, substitutions may be permitted to meet specific needs of individual students.

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Majors in Zoological Sciences

Majors in zoological sciences are for students interested in careers in animal biology. One has the choice of four options: zoology, entomology, fisheries, or wildlife, and degrees are offered in each option.

During the first two years, all students take the same subjects which emphasize the basic sciences and background courses. Thereafter, it is possible to elect courses to fit specific needs of the student in his or her option. The program during the junior and senior years is developed under the guidance of a faculty adviser who works closely with the student. During this period the student may wish to work toward graduate school upon graduation. The faculty

adviser assists the student in developing a program of study and with other academic and personal matters throughout his four years of training. Diversified career opportunities are excellent for well-trained persons in zoological sciences, and the opportunities increase as the level of training is raised.

At the bachelor's degree level, greatest demands are for research, management, survey, and regulatory work with state or federal agencies concerned with insects, fish, wildlife, or public health; for public relations and sales work with commercial companies; for technical assistants in research laboratories; for conservation and recreational work; and for private enterprises. At the graduate degree levels, opportunities are greatly enhanced, particularly for teaching, research, and extension at the university level; for research, development, and management with industry; for research with the Public Health Service, Fish and Wildlife Service, Entomology Research Division, United States Department of Agriculture, the Atomic Energy Commission, and other research organizations; and for employment in other areas.

Zoological Sciences

Options: Entomology, Fisheries, Wildlife, Zoology

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
BI 101 Prin. of Biology	5	BI 102 Plant Biology	5	BI 103 Animal Biology	5
MH 160 Algebra & Trig.	5	MH 161 An. Geom. & Cal.	5	MH 162 An. Geom. & Cal.	5
AS 202 Agr. Economics	5	CH 103 Fund. Chemistry I	4	CH 104 Fund. Chemistry II	4
ZY 100 Zool. Orientation	0	CH 103L Chemistry Lab.	1	CH 104L Chemistry Lab.	1
†Basic ROTC	1	†Basic ROTC	1	†Basic ROTC	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

SOPHOMORE YEAR

ZY 300 Genetics	5	ZY 303 Systematics & Evolution	5	ZY 306 Prin. of Anim. Ecol.	5
CH 207 Organic Chemistry	5	CH 208 Organic Chemistry	5	PS 205 Intr. Physics	5
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
†Basic ROTC	1	†Basic ROTC	1	†Basic ROTC	1

JUNIOR YEAR

54 hours to be arranged in consultation with adviser.

SENIOR YEAR

54 hours to be arranged in consultation with adviser.

Total hours required — 210 quarter hours

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

In addition to the courses listed above all students majoring in the zoological sciences must take the following courses:

PS 206 Intr. Physics	5	ZY 301 Comparative Anat.	5	ZY 424 Animal Physiology	5
SP 202 App. Oral Comm.	3	ZY 304 Gen. Entomology	5	ZY 421 Vert. Zoology I or	
VM 200 Microbiology	5	ZY 411 Parasitology	5	ZY 422 Vert. Zoology II	5

The remaining 70 hours will include a minimum of 12 hours of electives selected from the humanities and social science electives and a minimum of 35 hours of group electives shown in the following lists.

GROUP ELECTIVES—ZOOLOGY AND ENTOMOLOGY

AH 204 An. Nutrition and Biochemistry	5	CH 204-204L Analytical Chemistry	5
AH 406 Reproductive Physiology	5	CH 316 Physical Chemistry	5
AY 304 Soils	5	EH 304 Technical Writing	3
AY 401 Prin. Forage Production	5	GL 101, 102, 103 Introductory and	
BY 306 Plant Physiology	5	Historical Geology	5, 5, 5
BY 309 Plant Pathology	5	MH 163 Geometry and Calculus	5
BY 401 Biological Statistics	5	MH 264 Analytic Geometry — Calculus	5
BY 406 Systematic Botany	5	MH 265 Linear Differential Equations	3
BY 411 Phycology	5	PS 419 Scientific Instrumentation	3
BY 413 Plant Ecology	5	ZY 205 Wildlife Conservation	3
BY 414 Plant Morphology	5	ZY 206 Conservation in U. S.	3
BY 415 Developmental Plant Anatomy	5	ZY 207 Birds	3
CH 105 General Chemistry	3	ZY 210 Fish Culture	3
CH 105L General Chemistry Laboratory	2	ZY 302 Vertebrate Embryology	5

ZY 308 Micrology	5	ZY 418, 419 Experimental Heredity	5, 3
ZY 310 Cell Biology	5	ZY 420 Human Heredity	5
ZY 401 Invertebrate Zoology	5	ZY 421 Vertebrate Zoology I	5
ZY 402 Economic Entomology	5	ZY 422 Vertebrate Zoology II	5
ZY 404 Medical Entomology	5	ZY 426 Principles of Game Management	5
ZY 405 Forest Insects	5	ZY 437 Fisheries Biology	3
ZY 406 Bee Culture	3	ZY 442 Marine Invertebrate Zoology	9
ZY 407 General Insect Morphology	5	ZY 443 Marine Vertebrate Zoology and	
ZY 409 Histology	5	Ichthyology	9
ZY 410 Systematic Entomology	5	ZY 444 Marine Fisheries Biology	6
ZY 415 Limnology	5	ZY 450 Zoogeography of the Vertebrate	5

GROUP ELECTIVES—FISHERIES AND WILDLIFE

AS 412 Economic Aspects of Water		ZY 401 Invertebrate Zoology	5
Resource Management	5	ZY 410 Systematic Entomology	5
AY 307 General Soils	5	ZY 415 Limnology	5
AY 401 Prin. of Forage Production	5	ZY 416 Biological Productivity and	
BY 306 Fundamentals of Plant Physiology	5	Water Quality	3
BY 401 Biological Statistics	5	ZY 421 Vertebrate Zoology I	5
BY 406 Systematic Botany	5	ZY 422 Vertebrate Zoology II	5
BY 410 Aquatic Plants	5	ZY 426 Principles of Game Management	5
BY 411 Phycology	5	ZY 427 Wildlife Habitat Analysis	3
BY 413 Plant Ecology	5	ZY 428 Hatchery Management	5
BY 414 Plant Morphology	5	ZY 435 Marine Biology	3
FY 303 Forest Recreation	3	ZY 436 Mgt. of Small Impoundments	3
FY 415 Range Management	2	ZY 437 Fisheries Biology	3
FY 420 Silviculture	5	ZY 438 General Ichthyology	5
GL 101, 102 Introductory Geology	5, 5	ZY 439 Aquatic Communities	5
PS 419 Scientific Instrumentation	3	ZY 442 Marine Invertebrate Zoology	9
ZY 205 Wildlife Conservation	3	ZY 443 Marine Vertebrate Zoology	
ZY 206 Conservation in U. S.	3	and Ichthyology	9
ZY 207 Birds	3	ZY 444 Marine Fisheries Biology	6
ZY 210 Fish Culture	3	ZY 445 Fish Parasites	3
ZY 310 Cell Biology	5	ZY 446 Fish Diseases	3
ZY 326 Wildlife Biology	5		

HUMANITIES AND SOCIAL SCIENCES ELECTIVES FOR ZOOLOGICAL SCIENCES

RSY 361 Rural Sociology	5	HY 322 The U. S. in World Affairs	3
RSY 362 Community Organization	5	HY 381 History of Alabama	5
RSY 462 Sociology of Com. Develop.	5	JM 315 Agr. Journalism	3
AS 405 Agricultural Policy	3	JM 322 Feature Writing	5
AS 409 Land Economics	5	JM 421 Photo Journalism	5
EH 141 Medical Vocabulary	3	PA 202 Ethics and Society	5
EH 253, 254, 255 Survey of English		PA 210 Introduction to Philosophy	3
Literature	3, 3, 3	PA 211 Introduction to Deductive Logic	3
EH 301 Advanced Composition	3	PA 212 Introduction to Inductive Logic	3
EH 302 Creative Writing	3	PA 400 Philosophy of Science	5
EH 357, 358 American Literature	5, 5	PG 211, 212 Psychology I and II	3, 3
FL 121, 122, 221, 222 Elementary &		PG 445 Animal Behavior	4
Intermediate French	5, 5, 5, 5	PO 209 American Government	5
FL 131, 132, 231, 232 Elementary &		PO 210 State & Local Government	5
Intermediate Spanish	5, 5, 5, 5	PO 312 Introduction to Comparative	
FL 151, 152, 251, 252 Elementary &		Government	5
Intermediate German	5, 5, 5, 5	SY 201 Introduction to Sociology	5
GY 102 Principles of Geography	5	SY 203 Cultural Anthropology	5
GY 203 Economic Geography	5		

Biological Sciences and Teacher Education

Students in the Biological Sciences curriculum with majors either in Botanical or Zoological Sciences, who wish also to prepare for certification as teachers in secondary schools may pursue the dual objective of completing the requirements for the B.S. degree in their particular Biological Sciences major and the requirements of the Teacher Education Program.

Students who choose the dual objective program should declare this intent to their departmental advisers by the end of their sophomore year if possible. Students pursuing the dual objective plan will be assigned an adviser in the School of Education who will advise them on all matters involving requirements for completing the Teacher Education Program.

In addition to the specific requirements, including group electives required for the B.S. in Zoological Sciences or Botany, these students must also include the following courses in their curriculum:

	Literature (Amer., Eng., or World)	9
FED 213	Human Growth and Development	5
FED 214	Psychological Foundations of Education	5
FED 320	Social Foundations of Education	5
FED 480	Philosophical Foundations of Education	5
SED 405K	Teaching in Secondary School — Science	3
SED 410K	Program in Secondary School — Science	3
SED 425K	Professional Internship	15

Any of the above courses may be used as free electives toward the degree in Zoological Sciences or Botany and EH 253, EH 254, EH 357, FED 213 and FED 214 may be used as needed as humanistic-social electives. Students in the Zoological Sciences seeking to fulfill the requirements for teaching certification must elect at least 15 hours in botanical sciences from among the following courses: BY 306, BY 406, BY 411, BY 413, BY 414, BY 415. Students majoring in botany who want to earn a teaching certification must include at least 10 hours of electives in the Zoological Sciences from ZY 301, ZY 303, ZY 401, ZY 411, ZY 421, and ZY 422.

Food Science

The Food Science curriculum is designed for those who are interested in positions in the rapidly expanding food industry. The curriculum is administered through a faculty advisory system wherein a program of study may be developed in accordance with the needs and interests of the individual student. In this manner, a student may take a general course or may specialize in a commodity area such as dairy products, meats or fruits and vegetables. He may elect a business option with supporting courses in economics, agricultural economics, and business or he may elect a sciences option.

Curriculum in Food Science (FS)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 103 Fund. of Chem.	4	CH 104 Fund. of Chem.	4	CH 105 Fund. of Chem.	3
CH 103L Chemistry Lab.	1	CH 104L Chemistry Lab.	1	CH 105L Chemistry Lab.	2
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
MH 100 Algebra & Trig.	5	MH 161 An. Geom. & Cal.	5	DH 101 Man's Foods	3
‡Basic ROTC	1	LY 101 Library Science	1	SP 202 App. Oral Comm.	3
		‡Basic ROTC	1	‡Basic ROTC	1

SOPHOMORE YEAR

BI 101 Prin. of Biology	5	BI 102 Gen. Plant Biology	5	BI 103 Gen. Animal Bio.	5
CH 204 Anal. Chem.	5	CH 207 Organic Chem.	5	CH 208 Organic Chem.	5
CH 204L Anal. Chem. Lab.	2	PS 206 Intr. Physics	5	VM 200 Gen. Micro.	5
PS 205 Intr. Physics	5	‡Basic ROTC	1	‡Basic ROTC	1
‡Basic ROTC	1	PE Physical Education	1	PE Physical Education	1
PE Physical Education	1				

JUNIOR YEAR

AH 204 Animal Biochem. or		AS 202 Agri. Economics or		EH 345 Bus. & Prof. Writ.	5
NF 312 Nutri. Biochem.	5	EC 200 Gen. Economics	5	HF 342 Indust. Food Equip.	
HF 340 Indust. Food Pres.		HF 341 Indust. Food Equip.		& Processing II	5
Technology	5	& Processing I	5	Electives	8
Electives	8	NF 372 Fund. of Nutrition	3		
		Electives	5		

SENIOR YEAR

HF 343 Food Analysis &		DH 411 Food Plant Sani.	3	DH 410 Food Microbiology	5
Qual. Control	5	IE 320 Engineering Econ.	5	DH 412 Food Science Sem.	1
Electives	12	Electives	10	Electives	12

Total — 210 quarter hours

‡Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Forestry

Two curricula are offered in forestry, one in forest management and the other in wood technology. The former leads to the degree Bachelor of Science in Forestry while the other leads to the degree Bachelor of Science in Wood Technology. The Department also offers an honors program which leads to the degree Bachelor of Science in Forestry (Honors Program) and a recreation option in the forest management curriculum.

Training in forest management and administration prepares the student as a land manager. He acquires professional knowledge and skills relating to efficient production of wood as a raw material. He studies policies, techniques and procedures whereby land may be managed for related products and services including water, wildlife and recreation. There is a strong demand for foresters in private industry in the South. State and Federal agencies as well as consulting foresters employ a large number of graduates. The graduate may expect his initial assignments to include land line surveying, timber cruising, timber marking and land and timber purchasing. After experience is gained the graduate will assume more responsibility for land management plans and policies in his capacity as a land manager.

The recreation option for the forest management curriculum is designed to prepare foresters to cope with the special problems arising from the increased use of forest land for recreational purposes. Some attention is given to the sociological and psychological aspects of these activities and the harmonious inclusion of recreation into the overall land management program.

Wood technology is the science of making the most efficient use of the products of the tree. This includes the development of new products as well as more efficient production of standard products. The wood technologist must understand the physics and chemistry of wood as well as its anatomy and structure and must be familiar with various wood products and the methods for manufacturing them. The curriculum is sufficiently flexible that the student may specialize in chemistry, structural design, industrial management or in other fields of his choice by proper selection of his minors in these fields. The wood technologist finds employment with wood manufacturing industries and their suppliers as well as with private and public organizations which carry on research and product development for industry.

The Department of Forestry is accredited by the Society of American Foresters.

Curriculum in Forest Management (FY)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
MH 160 Algebra & Trig.	5	MH 161 An. Geom. & Cal.	5	MH 162 An. Geom. & Cal.	5
BI 101 Prin. of Biology	5	BI 102 Plant Biology	5	BI 103 Anim. Biology	5
FY 105 For. Convocation*	0	PE Physical Education	1	PE Physical Education	1
PE Physical Education	1				

SOPHOMORE YEAR

AS 202 Agric. Economics	5	CH 103 Fund. of Chem.	4	CE 201 Surveying I	5
GL 102 Intr. Geology II	5	CH 103L Gen. Chem. Lab.	1	CH 104 Fund. of Chem. II	4
EC 215 Fund. Cost. Acctg.	5	ZY 300 Genetics	5	CH 104L Gen. Chem. Lab.	1
Elective	3	FY 104 For. Cartography	2	PG 211 Psychology I	3
		SP 202 App. Oral Comm.	3	EH 304 Technical Writing	3
		Elective	3		

JUNIOR YEAR**First Quarter**

FY 201 Dendrology	5
FY 204 For. Mensuration	5
FY 309 Sampling	5
IE 204 Comp. Program	3

Second Quarter

AY 305 Gen. Soils	5
FY 203 Silvics I	5
FY 310 Adv. Mensur.	3
Electives	6

Third Quarter

FY 205 Wood Ident.	3
FY 207 Silvics II	5
ZY 305 For. Entomology	3
BY 310 For. Pathology	3
Elective	3

SUMMER CAMP

FY 303 For. Recreation	3
FY 390 Field Mensuration	3
FY 391 For. Engineering	3
FY 397 For. Regeneration	3
FY 398 For. Tour	1
FY 417 Photogrammetry	5

SENIOR YEAR

FY 408 Logging	3	FY 302 For. Fire Control	3	FY 396 For. Site Eval.	2
FY 420 Silviculture	5	FY 435 For. Prod. Mktg.	3	FY 407 For. Management	5
FY 437 For. Econ. I	3	FY 436 For. Watershed Mgt.	3	FY 415 Range Mgt.	2
Electives	7	FY 438 For. Econ. II	3	FY 434 For. Policy & Law	3
		ZY 425 For. Wildlife Mgt.	3	Elective	5
		Elective	3		

Total — 228 quarter hours

*This course will be taken in all except Summer Quarters.

Basic ROTC may be added to each quarter of the Freshman and Sophomore years with the elective credits in the curriculum being reduced an equal amount.

Recreation Option

Freshman and Sophomore years same as in Forest Management Curriculum

JUNIOR YEAR**First Quarter**

FY 201 Dendrology	5
FY 204 For. Mensuration	5
FY 309 Sampling	5
IE 204 Comp. Program	3

Second Quarter

AY 305 Gen. Soils	5
FY 203 Silvics I	5
RSY 361 Rural Sociology	5
Elective	3

Third Quarter

BY 310 For. Pathology	3
FY 207 Silvics II	5
FY 460 Wildland Rec.	3
Phil. & Pol.	3
Elective	7

SUMMER CAMP

FY 303 For. Recreation	3
FY 391 Forest Engineering	3
FY 398 For. Tour	1
HF 327 Landscape Eng.	3
FY 461 Recr. Land Classif.	3
FY 417 Photogrammetry	5

SENIOR YEAR

FY 420 Silviculture	5	FY 302 For. Fire Cont.	3	FY 407 For. Management	5
FY 437 For. Econ. I	3	FY 436 For. Watershed Mgt.	3	FY 415 Range Mgt.	2
ZY 447 Mgt. of Streams & Lg. Impoundments	3	FY 438 For. Econ. II	3	FY 434 For. Pol. & Law	3
Electives	6	ZY 425 For. Wildlife Mgt.	3	FY 469 Rec. Site Mgt.	3
		Electives	6	Elective	5

Total — 228 quarter hours**Honors Program in Forestry**

The Honors Program in Forestry provides able students opportunity to explore in depth areas in which they are interested, to prepare for graduate school, or to obtain a more rounded education. The program is flexible, permitting concentration of effort in areas of the student's choosing.

Students with at least five quarters remaining in the Forest Management curriculum and with a grade point average of 1.75 or better may apply for admission to the program following completion of the course work requirements through the first six quarters. Permission for election to the program rests with the Head and the Executive Council of the Department of Forestry. Upon admission the student will be assigned to a faculty adviser who will guide him in the preparation of his program.

JUNIOR YEAR

First Quarter

FY 201 Dendrology	5
FY 204 For. Mensuration	5
FY 309 Sampling	5
IE 204 Comp. Program	3

Second Quarter

AY 305 General Soils	5
FY 203 Silvics I	5
Electives	8

Third Quarter

FY 207 Silvics II	5
FY 421 For. Research Meth.*	3
Electives	10

SENIOR YEAR

FY 420 Silviculture	5
FY 437 For. Econ. I	3
Electives	10

FY 438 For. Econ. II	3
Electives	15

FY 407 For. Management	5
FY 480 Senior Thesis	5
FY 490 Seminar in For.	1
Electives	6

Total — 210 quarter hours

*Any 3 or 5 hour course in statistics may be substituted for FY 421.

Twenty-five of the free elective hours are to be chosen under the supervision of the faculty adviser, so as to develop a distinct program leading to a predetermined goal.

Curriculum in Wood Technology (WT)

FRESHMAN YEAR

First Quarter

EH 101 English Comp.	3
HY 101 World History	3
CH 103 Fund. Chem. I	4
CH 103L Gen. Chem. Lab.	1
MH 160 Algebra & Trig.	5
FY 105 For. Convocation*	0
†Basic ROTC	1
PE Physical Education	1

Second Quarter

EH 102 English Comp.	3
HY 102 World History	3
CH 104 Fund. Chem. II	4
CH 104L Gen. Chem. Lab.	1
MH 161 An. Geom. & Cal.	5
†Basic ROTC	1
PE Physical Education	1

Third Quarter

EH 103 English Comp.	3
HY 103 World History	3
CH 105 Gen. Chemistry	3
CH 105L Gen. Chem. Lab.	2
MH 162 An. Geom. Cal.	5
†Basic ROTC	1
PE Physical Education	1

SOPHOMORE YEAR

BI 101 Prin. of Biology	5
PS 205 Intr. Physics	5
MH 163 Anal. Geom. & Cal.	5
†Basic ROTC	1

BI 102 Plant Biology	5
PS 206 Intr. Physics	5
AH 204 An. Biochem. & Nut.	5
†Basic ROTC	1

BI 103 Anim. Biology	5
FY 206 Wood Measure**	3
EG 102 Eng. Drawing	2
FY 205 Wood Ident. & Uses	3
EH 304 Technical Writing	3
†Basic ROTC	1

JUNIOR YEAR

EC 200 Gen. Economics	5
FY 201 Dendrology	5
FY 311 Wood Anatomy**	5
SP 202 App. Oral Comm.	3

FY 432 Seasoning & Preserv.**	5
FY 421 For. Research Meth.***	3
Elective	10

PG 211 Psychology I	3
FY 433 Seas. & Preserv. Lab.	2
Elective	12

SENIOR YEAR

FY 330 For. Products**	5
Elective	13

FY 425 Wood Glu. & Lam.**	5
Elective	13

FY 431 Mech. Prop. of Wood**	5
Elective	13

Total — 210 quarter hours

Sufficient latitude is allowed that the student may plan his elective work with his adviser to fulfill his personal objectives while in college. One minor, consisting of 30 hours in the area of Mathematics, Chemistry or Engineering, is required. In addition, 10 hours in computer programming and 10 hours in statistics, including laboratory are to be selected from the electives. From the remaining elective hours, 10 are to be selected with the adviser in the general area of humanities. A student may always substitute a more intensive group of courses for one or more of the required courses, providing the same breadth of coverage is maintained.

As a part of the requirement for the degree with a major in wood technology the student must complete a minimum of three weeks of supervised tours of forest products industries. A satisfactory report on these tours is to be submitted to the department head by the beginning of the final quarter prior to graduation.

*This course to be taken in all except summer quarters.

**Alternate year offering.

***Any 3 or 5 hour course in statistics may be substituted for FY 421.

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Landscape and Ornamental Horticulture

A blending of art, science and technology, Landscape and Ornamental Horticulture is a Life Science concerned with plants for personal enrichment

and well-being. The professional Ornamentalist combines many diverse talents to suit his interests and ambitions.

The Landscape and Ornamental Horticulture curriculum provides professional and basic knowledge and develops basic skills in four areas — Landscape Design, Florist Crop Production, Nursery Crop Production and Retail Flower Shop Management. By proper selection of electives, students may prepare for careers in research, teaching or extension activities; as owners and managers of floral or woody ornamental production units and of retail outlets for floral and woody ornamental products; landscape designing; and managing recreational gardens and other areas.

Degree candidates are encouraged to have three months, or an equivalent of three months, practical experience in industry to be arranged by the student's major professor prior to graduation.

Curriculum in Landscape and Ornamental Horticulture (OH)

FRESHMAN YEAR

First Quarter

BI 101 Prin. Biology	5
EH 101 English Comp.	3
HF 101 Intr. Hort.	1
MH 100 Alg. & Trig.	5
†Basic ROTC	1
PE Physical Education	1

Second Quarter

BI 102 Gen. Plant Biology	5
CH 103 Fund. Chem. I	4
CH 103L Gen. Chem. Lab.	1
EH 102 English Comp.	3
HY 101 World History	3
†Basic ROTC	1
PE Physical Education	1

Third Quarter

CH 104 Fund. Chem. II	4
CH 104L Gen. Chem. Lab.	1
EH 103 English Comp.	3
HY 102 World History	3
MH 101 An. Geom. & Cal.	5
†Basic ROTC	1
PE Physical Education	1

SOPHOMORE YEAR

BI 103 Gen. An. Biology	5
HF 221 Landscape Gard.	5
HY 103 World History	3
SP 202 App. Oral Comm.	3
†Basic ROTC	1

AS 202 Agr. Economics	5
PA 210 Intr. Philosophy	3
PG 211 Psychology I	3
†Basic ROTC	1
Electives*	5

CH 207 Organic Chem.	5
HF 224 Plant Prop.	5
†Basic ROTC	1
Electives	5

JUNIOR YEAR

BY 306 Plant Phys.	5
HF 323 Ghse. Constr. & Mgt.	5
Electives	8

AY 304 Gen. Soils	5
BY 309 Plant Pathology	5
Electives	8

EH 390 Adv. Comp.	5
Electives	13

SENIOR YEAR

ZY 402 Econ. Ent.	5
Electives	13

HF 426 Minor Problems	5
Electives	13

BI 406 System. Botany	5
AY 402 Soil Fertility	5
Electives	8

Total — 210 quarter hours

†Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

*This curriculum consists of four areas of study: Retail Flower Shop Management, Florist Crop Production, Nursery Crop Production and Landscape Design. Electives are provided in the Sophomore, Junior and Senior year to prepare a student in one of these areas and are to be selected at the consent of the student's adviser and the approval of the Dean of Agriculture.

RECOMMENDED ELECTIVES IN LANDSCAPE AND ORNAMENTAL HORTICULTURE

Approved Electives from the Humanities and Social Sciences:

EH 253 Survey of English Literature	3
EH 285 Literature of the Western World	3
EH 301-302 Creative Writing	3-3
EH 365-366 Survey of American Literature	5-5
EH 377 The European Novel	5
EH 431-432 Shakespeare	5-5
FL 121 Elementary French	5
FL 122 Elementary French	5
FL 131 Elementary Spanish	5
FL 132 Elementary Spanish	5
FL 151 Elementary German	5
FL 152 Elementary German	5
FL 171 Elementary Russian	5
GY 201 Weather and Climate	5
GY 404 Physical Geography of the World	5
HY 201 History of U. S.	5

Approved Group Electives:

AH 418 Biochemistry	5
AN 350 Soil and Water Technology	5
AR 110 Design Fundamentals	5
AR 111 Design Fundamentals	5
AR 360 Appreciation of Architecture	3
AR 370 Spaces for Living	3
AS 301 Agricultural Marketing	5
AS 410 Agricultural Business Management	3
AT 105 Drawing I	5
AT 106 Drawing II	5
AT 113 Perspective	3
AY 405 Turf and Its Management	3
AY 406 Commercial Fertilizers	3
BY 401 Biological Statistics	5
BY 406 Systematic Botany	5
BY 415 General Plant Ecology	5

HY 202 History of U. S.	5	CE 201 Surveying I	5
MU 371 Intr. to Music	3	CH 204 Analytical Chemistry	5
PA 202 Ethics and Society	5	CH 208 Organic Chemistry	5
PA 210 Intr. to Philosophy	3	ACF 211-12 Intr. Accounting	5-5
PA 211 Intr. to Deductive Logic	3	MN 341 Business Law	3
PA 212 Intr. to Inductive Logic	3	MT 333 Salesmanship	3
PA 310 Eastern Religious Thought	3	EH 345 Bus. and Professional Writing	5
PA 315 Western Religious Thought	3	GL 101-2 Intr. Geology	5-5
PA 401 The Philosophy of Communism	5	HF 201 Orchard Management	5
PG 212 Psychology II	3	HF 225 Flower Arranging	3
PO 209 Intr. Am. Govt.	5	HF 308 Vegetable Crops	5
RSY 361 Rural Sociology	5	HF 325 Landscape Planning of Home Grounds	5
RSY 362 Community Organization	5	HF 326 Landscape Planning of Public Grounds	5
SY 201 Intr. to Sociology	5	HF 421 Care & Maintenance of Orn. Plants	5
SY 203 Cultural Anthropology	5	HF 422 Fund. of Floricultural Crop. Prod.	5
		HF 423 Fund. of Nursery Management	5
		HF 424 Planting Design	5
		HF 425 Flower Shop Management	5
		HF 427-8 Minor Problems	5-5
		HF 429 Adv. Plant Propagation	5
		HF 430 Marketing Hort. Spec. Products	5
		HF 431 Adv. Landscape Gardening	5
		HF 432 Controlled Plant Growth	5
		JM 315 Ag. Journalism	3
		MH 162-3 Analytic Geometry & Calculus	5-5
		PS 205 Intr. Physics	5
		PS 206 Intr. Physics	5
		VM 200 General Microbiology	5
		ZY 300 Genetics	5

School of Architecture and Fine Arts

E. KEITH MCPHEETERS, *Dean*

THE SCHOOL OF ARCHITECTURE AND FINE ARTS includes the Departments of Architecture, Art, Building Technology, Music and Theatre.

The Departments of Architecture and Building Technology offer degree curricula in Architecture, Interior Design, Industrial Design, and Building Technology. The Department of Architecture also participates in the multi-disciplinary graduate program in Urban and Regional Planning which is administered by the Graduate School and the Center for Urban and Regional Planning. The primary objective of these programs is to educate professional practitioners for many aspects of the designed physical environment.

The Departments of Art, Music and Theatre offer curricula in Fine Arts, Visual Design, Music and Theatre. The Art Department also offers a graduate degree in Fine Arts. The Departments of Art and Music cooperate with the School of Education in the education of teaching professionals. The objective of these programs is to develop creative and professionally knowledgeable practitioners and teachers in the arts and to provide a foundation for continuing professional development.

Department of Architecture

The Department of Architecture was established in 1907 and is the oldest in the South. Courses are offered leading to the degrees Bachelor of Architecture, Bachelor of Interior Design and Bachelor of Industrial Design.

Admissions

Tests. In addition to meeting the requirements for admission to the University all prospective students will be required to make a satisfactory score on the Architectural School Aptitude Test which is given by the Educational Testing Service, P.O. Box 592, Princeton, New Jersey 98540. Tests are given on certain dates at the Auburn Campus as well as at other university and college campuses throughout the United States. Persons wishing to take the test should correspond directly with the Educational Testing Service.

Acceptance

Acceptance for admission to professional curricula in architecture, industrial design, and interior design in the School of Architecture will be determined by the Admissions Committee in the Department of Architecture on the basis of an evaluation of the candidate's test scores and academic records.

Transfer

Transfer students from non-architectural programs will be required to begin the Design sequence at a level not higher than first quarter, second year. Transfer students from accredited schools of Architecture will be required to present examples of their work for evaluation by the Admissions Committee. The Committee will determine the level at which the student will enter the Design Sequence.

New students may enter the department any quarter. Transfer students with advanced credit may complete their first year requirements by taking advantage of the Summer session which combines AT 105 and AR 110 and 111.

Architecture

The Curriculum in Architecture prepares the student to take his place as a citizen and as a professional. Since the building industry is one of the three largest in the nation in terms of expenditure and employment, the architect today must accept a concern for the improvement of the physical environment and assume the leadership in evolving effective procedures toward this end. Therefore, in an area of broad technological advancement, the architect must bring to his work technical knowledge, social insight, creative imagination, and individual integrity.

The Department of Architecture is a member of the Association of Collegiate Schools of Architecture, and the curriculum in Architecture is accredited by the National Architectural Accrediting Board. Training at Auburn University prepares the student for the office experience and the examination required by the registration laws for the practice of architecture in Alabama as well as for examination by the National Council of Architectural Registration Boards. The cooperative education program is also offered. For more information refer to page 44.

Simulated State Board examinations will be given during the fifth year to prepare Architecture students for this test after graduation.

Curriculum in Architecture (AR)

FIRST YEAR

First Quarter		Second Quarter		Third Quarter	
AR 110	Design Fundamentals _____ 5	AR 111	Design Fundamentals _____ 5	AT 105	Basic Drawing _____ 5
EH 101	English Composition _____ 3	EH 102	English Comp. _____ 3	EH 103	English Composition _____ 3
MH 161	An. Geom. & Cal. _____ 5	MH 162	An. Geom. & Cal. _____ 5	MH 163	An. Geom. & Cal. _____ 5
HY 101	World History _____ 3	HY 102	World History _____ 3	HY 103	World History _____ 3
TH 101	Intr. to Arts _____ 1	TH 102	Intr. to Arts _____ 1	TH 103	Intr. to Arts _____ 1

SECOND YEAR

AR 201	Architectural Design _____ 5	AR 202	Architectural Design _____ 5	AR 203	Architectural Design _____ 5
PS 205	Physics _____ 5	BT 206	Maths. & Constr. _____ 5	AR 361	Hist. & Theory of Arch. _____ 3
PE	Physical Education _____ 1	PS 206	Physics _____ 5	BT 220	Mech. of Struc. _____ 5
		PE	Physical Education _____ 1	PE	Physical Education _____ 1
			General Elective _____ 3		Elective _____ 3

THIRD YEAR

AR 301	Architectural Design _____ 5	AR 302	Architectural Design _____ 5	AR 303	Architectural Design _____ 5
AR 362	Hist. & Theory of Arch. _____ 3	AR 363	Hist. & Theory of Arch. _____ 3	AR 364	Hist. & Theory of Arch. _____ 3
BT 311	Structures I _____ 3	BT 312	Structures II _____ 3	BT 313	Structures III _____ 3
PG 211	Psychology _____ 3	SY 201	Sociology _____ 5	EC 206	Socio-Economic Foundations _____ 3
	Elective _____ 5		Elective _____ 3		Elective _____ 3

FOURTH YEAR					
First Quarter		Second Quarter	Third Quarter		
AR 401	Architectural Design _____ 5	AR 402	Architectural Design _____ 5	AR 403	Architectural Design _____ 5
	Planning Elective _____ 3	BT 411	Structures IV _____ 3	BT 413	Structures VI _____ 3
SV 405	Sociology _____ 5	BT 412	Structures V _____ 3		Planning Elective _____ 3
	Elective _____ 3		Computer Science _____ 3	BT 453	Bldg. Equipment _____ 3
	Elective _____ 3	BT 452	Bldg. Equipment _____ 3		Elective _____ 3
FIFTH YEAR					
AR 465	Architectural Design _____ 5	AR 466	Architectural Design _____ 5	AR 467	Architectural Design _____ 7
AR 471	Professional Prac. _____ 3	AR 472	Professional Prac. _____ 3		Seminar _____ 5
	Group Elective _____ 5	AR 499	Design Research _____ 2		Group Elective _____ 5
	Seminar _____ 3		Group Elective _____ 5		
	Elective _____ 3		Elective _____ 3		

Total — 265 quarter hours

Six hours of Basic ROTC and six hours of Advanced ROTC may be substituted for twelve hours of general electives.

Two planning Electives must be selected from the following list:

URP 405 (3)	Metropolitan Area Governmental Problems
URP 605 (3)	Urban Design
URP 607 (3)	Regional and Urban Economics
URP 611 (3)	Transportation Planning
URP 615 (3)	Seminar on Current Planning Issues
URP 662 (3)	Social System and Communities

Seminars will be chosen from the following list:

AR 435	Art and Architecture Seminar	3
AR 460	The Architect and Society	3
AR 476	Seminar in Contemporary Concepts	5
AR 477	Seminar in Historical Problems	5
AR 478	Seminar in Tech. Problems	3
AR 479	Seminar in Architecture Literature	2

Five-hour elective courses will include either three courses in advanced structures or electives chosen from the group electives in Art, Economics, English, Foreign Languages, History, Philosophy, Psychology, Sociology, and Speech.

Honors Program in Architecture

Beginning in the fourth year of the curriculum in Architecture, superior students capable of independent study may, on recommendation of the Faculty, pursue an approved sequence of study designed to develop a field of concentration. Each student shall submit a plan of study for approval before commencing the work. The student may earn a maximum of 15 hours of credit in independent study, a special project, or in research. After approval students shall enroll in AR 495, Honors Program, for up to 5 hours credit in any one quarter, and pursue the independent study under the supervision of an assigned faculty member.

Interior Design

The curriculum in Interior Design seeks to prepare the student to take his place as a professional specialist in the design of interior space. As such, he expects to assume a responsible role among those who shape physical environment. His primary interest in the development of interiors is concerned with the social, historical and technical implications of these aspects of space, surface and material which distinguish his work. His training will enable him to develop a practice as a private consultant, as a designer of furniture and textiles, and as a valuable associate of the environmental design team.

Curriculum in Interior Design (ID)

First Quarter			FIRST YEAR			Third Quarter		
			Second Quarter					
AR 110	Design		AT 105	Drawing I	5	AR 111	Design	
	Fundamentals	5	EH 102	English Comp.	3		Fundamentals	5
EH 101	English Comp.	3	HY 102	World History	3	EH 103	English Comp.	3
HY 101	World History	3	MH 161	An. Geom. & Cal.	5	HY 103	World History	3
MH 159	Pre-Cal. Math	5	PE	Physical Education	1		Nat. Sci. Elect.	5
PE	Physical Education	1	TH 102	Intr. to Arts	1	PE	Physical Education	1
TH 101	Intr. to Arts	1				TH 103	Intr. to Arts	1

First Quarter			SECOND YEAR			Third Quarter		
AR 201	Architectural Design	5	AR 202	Architectural Design	5	AR 203	Architectural Design	5
AR 215	Elements of I.D.	3	AR 216	Elements of I.D.	3	AR 361	Hist. & Theory of Arch.	3
EC 200	Gen. Economics	5	PG 211	Psychology	3	AR 217	Elements of I.D.	3
				Elective	5	SY 201	Sociology	5
							Elective	3
			THIRD YEAR					
AR 305	Interior Design	5	AR 306	Interior Design	5	AR 307	Interior Design	5
AR 365	Period Interiors	5	AR 366	Period Interiors	5	AR 367	Contemporary Interiors	3
AR 362	Hist. & Theory of Arch.	3	AR 363	Hist. & Theory of Arch.	3	AR 364	Hist. & Theory of Arch.	3
CA 415	History of Textiles	5	CA 333	Lighting	3	EC 331	Marketing	5
			FOURTH YEAR					
AR 405	Interior Design	5	AR 406	Interior Design	5	AR 407	Interior Design (thesis)	7
AR 441	Professional Prac.	3	AR 408	Interior Design Res.	2	AT 339	Art History II	5
FL	Foreign Language	5	FL	Foreign Language	5		Elective	5
CA 345	Creative Crafts	3	AT 338	Art History	5			
Total — 207 quarter hours								

Two months of practical experience with a professional interior designer is required between the 3rd and 4th year.
Six hours of Basic ROTC and six hours of advanced ROTC may be substituted for 12 hours of general electives.

Industrial Design

Industrial Design is concerned primarily with the practical and aesthetic relation of products and systems to those who use them. The Industrial Designer as a leading member of a research and development team — composed of engineers, scientists, and designers — is responsible for the product's shape, color, proportion, and texture, or for the optimum interaction between each item in a system. He is deeply concerned with such factors of use as efficiency, convenience, safety, comfort, maintenance, and cost.

The Industrial Designer's activity encompasses areas such as product design, transportation design, industrialized building, package design, exhibition design, and systems design.

The student of Industrial Design learns, for example, the basic principles of design, engineering, human factors designing, marketing, and sociology. He acquires such technical skills as drafting, model-making, photographing and sketching techniques. He is introduced to design methods, product planning, statistics, materials, manufacturing methods, consumer psychology, and environmental studies.

The four-year curriculum leads to the professional degree of Bachelor of Industrial Design. The program is approved by the Industrial Designers Society of America. Graduates will qualify for positions in industrial design consultant offices and in various industries.

The cooperative education program is also offered. For more information refer to page 44.

Curriculum in Industrial Design (IN)

First Quarter			FIRST YEAR			Third Quarter		
AR 110	Design Fundamentals	5	AT 105	Drawing I	5	AR 111	Design Fundamentals	5
EH 101	English Comp.	3	EH 102	English Comp.	3	EH 103	English Comp.	3
HY 101	World History	3	HY 102	World History	3	HY 103	World History	3
TH 101	Intr. to Arts	1	TH 102	Intr. to Arts	1	TH 103	Intr. to Arts	1
MH 159	Pre-Cal. Math	5	MH 161	An. Geom. & Cal.	5	EG 103	Engr. Drawing I	2
PE	Physical Education	1	PE	Physical Education	1	IL 102	Welding Science	1
						IL 101	Woodworking	1
						PE	Physical Education	1

First Quarter			SECOND YEAR			Third Quarter		
			Second Quarter					
AR 210 Industrial Design	5		AR 211 Industrial Design	5		AR 212 Industrial Design	5	
PG 211 Psychology I	3		AR 222 Tech. Illustration	5		AR 223 Industrial Des. Meth.	5	
AR 221 Mats. & Technology	5		EG 105 Engr. Drawing II	2		EG 204 Kinematics of Mach.	3	
EG 104 Descr. Geometry	2		IL 103 Machine Tool Lab.	1		PS 204 Survey in Physics	5	
IL 104 Sheetmetal Des.	1		IL 105 Foundry Tech.	1				
CH 101 Intr. to Chemistry	2		CH 102 Intr. to Chemistry	2				
			CH 103L Gen. Chem. Lab.	1				
			THIRD YEAR					
AR 310 Industrial Design	5		AR 311 Industrial Design	5		AR 312 Industrial Design	5	
EC 200 General Economics	5		AT 338 Art History I	5		MT 331 Prin. of Marketing	5	
Elective	3		Elective	3		Elective	5	
Elective	5		IL 308 Gages & Measurements	5		AR 308 Design Workshop	3	
			FOURTH YEAR					
AR 410 Industrial Design	6		AR 411 Industrial Design	6		AR 412 Ind. Des. Thesis	6	
PG 461 Industrial Psychology	5		AR 415 Hy. of Ind. Des.	5		AR 485 Seminar in Ind. Des.	5	
Elective	3		Elective	5		SY 408 Industrial Sociology	5	
PG 490 Spec. Problems Psy. (Human Engineering)	4							

Total — 210 quarter hours

Electives must come from the list of approved electives in Science and the Humanities.

Six hours of Basic ROTC and six hours of Advanced ROTC may be substituted for twelve hours of general electives.

Department of Art

The Department of Art offers curricula designed to provide training and experience for those who wish to become professional designers, practitioners in the fine arts, or artist-teachers. It also offers courses for education majors specializing in art and for students who seek general knowledge and appreciation of the visual arts. The program of studio courses is combined with studies of the functions and historical background of the visual arts. Courses in general education promote in the student a comprehension of his responsibilities to the society and culture in which he lives.

Two curricula are offered: *Fine Arts* and *Visual Design*, each leading to the degree of Bachelor of Fine Arts. The first two years of the two curricula are similar. Emphasis is given to a fundamental grasp of basic art principles with the aim of stimulating a creative use of the elements involved. Following these basic years, curriculum content varies as the student enters into his professional field.

Students in the School of Education may elect a minor or a major in Art (See page 130). Students in the School of Arts and Sciences may elect a minor (15 hours) or a double minor (30 hours) in Art.

The Department of Art is a member of the National Association of Schools of Art and the College Art Association.

Fine Arts

Following two years of basic studies, the student, with faculty approval, enters advanced courses in painting, sculpture and printmaking. Preferences are emphasized through art electives and through academic electives from other areas of the University.

Graduates in Fine Arts may elect to practice in their chosen fields or to teach at advanced levels. Students who contemplate teaching as a career should plan to work toward a Master of Fine Arts degree at this or another institution.

Curriculum in Fine Arts (FA)

FIRST YEAR			Third Quarter		
First Quarter			Second Quarter		
AT 105 Drawing I	5	AT 106 Drawing II	5	AT 107 Drawing III	5
AT 181 Design Fundamentals I	5	AT 113 Perspective	3	AT 182 Design Fundamentals II	5
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
‡Basic ROTC	1	IL 102 Welding Sci. and Appl.	1	‡Basic ROTC	1
PE Physical Education	1	‡Basic ROTC	1	PE Physical Education	1
		PE Physical Education	1		
SECOND YEAR			THIRD YEAR		
AT 338 Art History I	5	AT 227 Sculpture I	5	AT 205 Figure Drawing I	5
*Natural Science	5	*Natural Science	5	AT 222 Painting I	5
***FL Foreign Language	5	***FL Foreign Language	5	***FL Foreign Language	5
**PA 211 Intr. to Deductive Logic	3	**PA 212 Intr. to Inductive Logic	3	Elective	3
‡Basic ROTC	1	‡Basic ROTC	1	‡Basic ROTC	1
AT 215 Figure Construction	5	AT 307 Figure Drawing II	5	AT 305 Printmaking I	5
AT 224 Painting II	5	AT 322 Painting III	5	AT 327 Sculpture II	5
AT 339 Art History II	5	Elective	5	Elective	5
EH 253 Lit. in English	3	EH 254 Lit. in English	3	Elective	3
FOURTH YEAR			FOURTH YEAR		
AT 324 Painting IV	5	AT 422 Painting V	5	AT 496 Thesis	5
AT 405 Printmaking II	5	Elective	5	Elective	5
AT 427 Sculpture III	5	Elective	5	Elective	5

Total — 209 quarter hours

‡Students not taking Basic ROTC must elect six appropriate credit hours as replacement.

*A student must satisfy a minimum requirement of 10 hours in one of the following:
Biology 101-4, Chemistry 103-4, Physics 205-6, Geology 101-2 or 101-3.

**Mathematics may be substituted for PA 211 and 212.

***15 hours of foreign language must be taken in the same language. Students may elect French, Spanish, or German.

A minimum of 20 hours must be taken in the two academic areas of Mathematics — Natural Sciences and Social Science, with at least one course in each area.

RECOMMENDED ELECTIVES:

Natural Sciences: Geology, Zoology, Botany, Chemistry, Physics and Mathematics.
Social Sciences: Psychology, Sociology, Geography, Anthropology, Archaeology.

Visual Design

The program in Visual Design gives fundamental training in the techniques of visual communication. Following the two year course in basic art principles, and with faculty approval, the student enters Visual Design. A core curriculum emphasizes the techniques of drawing for reproduction, lettering and typographical layout. The student is encouraged to think creatively within the limits of materials and processes. Beginning the third year, the student develops special interests in painting, printmaking, sculpture, illustration or fashion through a series of art electives. A balanced group of academic subjects helps to further an understanding of the function of design in commerce and industry. This breadth of background increases the possibility of future advancement to administrative work.

Curriculum in Visual Design (VD)

FIRST YEAR			Third Quarter		
First Quarter			Second Quarter		
AT 105 Drawing I	5	AT 106 Drawing II	5	AT 107 Drawing III	5
AT 181 Design Fundamentals I	5	AT 113 Perspective	3	AT 182 Design Fundamentals II	5
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
‡Basic ROTC	1	‡Basic ROTC	1	‡Basic ROTC	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

SECOND YEAR

First Quarter		Second Quarter		Third Quarter	
AT 211 Lettering	5	AT 205 Figure Drawing I	5	AT 215 Figure Construction	5
AT 227 Sculpture I	5	AT 212 Graphic Processes	5	AT 224 Painting II	5
*PA 211 Intr. to Deductive Logic	3	AT 222 Painting I	5	EH 253 English Literature	3
**BI 101 Prin. of Biology	5	*PA 212 Intr. to Inductive Logic	3	**BI 104 Bio. in Human Affairs	5
‡Basic ROTC	1	‡Basic ROTC	1	‡Basic ROTC	1

THIRD YEAR

AT 381 Visual Design I	5	AT 382 Visual Design II	5	AT 383 Visual Design III	5
AT 307 Figure Drawing II	5	AT 355 Illustration I	5	AT 361 Fashion I	5
AT 338 Art History I	5	AT 339 Art History II	5	EC 200 General Economics	5
PG 211 Psychology I	3	PG 212 Psychology II	3	EH 254 English Literature	3

FOURTH YEAR

AT 481 Visual Design IV	5	AT Art Elective	5	AT 497 Thesis	5
AT Art Elective	5	Natural Science Elect.	5	Elective	5
EC 331 Prin. of Marketing	5	Elective	5	Elective	5

Total — 210 quarter hours

‡Students not taking Basic ROTC must elect six appropriate credit hours as replacement.

*Mathematics may be substituted for PA 211 and 212.

**Chemistry 103-4, Physics 205-6, or Geology 101-2 or 101-4 may be substituted for Biology 101-4.

A minimum of 20 hours must be taken in the two academic areas of Mathematics — Natural Sciences and Social Science, with at least one course in each area.

RECOMMENDED ELECTIVES:

Natural Sciences: Geology, Zoology, Botany, Chemistry, Physics and Mathematics.
Social Sciences: Psychology, Sociology, Geography, Anthropology, Archaeology.

Graduate Work in Fine Arts

Students who hold the degree of Bachelor of Fine Arts, or a similar degree, are eligible to apply to the Dean of the Graduate School for admission to the graduate course leading to the Master of Fine Arts degree. For details examine the Bulletin of the Graduate School.

Department of Building Technology

The purpose of the curriculum in Building Technology is to develop professionally knowledgeable practitioners and managers for a wide variety of roles in the construction industry.

The Department of Building Technology offers courses in the design of structural and mechanical systems for buildings, construction procedures, building cost estimation and construction management. The curriculum leads to the degree of Bachelor of Building Construction.

Curriculum in Building Construction (BC)**FIRST YEAR**

First Quarter		Second Quarter		Third Quarter	
BT 101 Intr. to Building	3	BT 102 Drawing & Proj.	3	GL 102 Geology	5
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
MH 160 Algebra & Trig.	5	MH 161 An. Geom. & Cal.	5	MH 162 An. Geom. & Cal.	5
‡Basic ROTC	1	‡Basic ROTC	1	‡Basic ROTC	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

SECOND YEAR

EC 200 Gen. Economics	5	ACF 211 Intr. Accounting	5	BT 220 Mech. of Structures	5
MH 163 An. Geom. & Cal.	5	CE 201 Surveying	5	ACF 212 Intr. Accounting	5
PS 205 Physics	5	PS 206 Physics	5	BT 206 Matls. & Constr.	5
‡Basic ROTC	1	‡Basic ROTC	1	‡Basic ROTC	1

THIRD YEAR

BT 321 Constr. Prob. I	5	EC 445 Indus. Relations or Labor Problems	5	BT 313 Structures III	3
BT 311 Structures I	3	BT 312 Structures II	3	BT 362 Hist. of Bldg. II	3
Elective	3	BT 361 Hist. of Bldg. I	3	Technical Elective	5
Group Elective	5	Group Elective	5	Group Elective	5
English Elective	3	English Elective	3	Elective	3

FOURTH YEAR

First Quarter	Second Quarter	Third Quarter
BT 433 Constr. Methods & Estimating I _____ 5	BT 434 Const. Meth. & Estimating II _____ 5	BT 490 Building Const. Thesis _____ 7
BT 422 Constr. Prob. II _____ 5	BT 452 Bldg. Equip. I _____ 3	BT 453 Bldg. Equipment II _____ 3
BT 411 Structures IV _____ 3	Technical Elec. _____ 5	Technical Elective _____ 6
BT 412 Struct. V _____ 3	BT 364 Hist. of Bldg. IV _____ 3	
BT 363 Hist. Bldg. III _____ 3	Elective _____ 3	

Total — 208 quarter hours

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Six hours of Advanced ROTC may be substituted for two three-hour General Electives. English Electives will be restricted to courses in English. Group Electives will be restricted to the courses included in the Group Elective list. Technical Electives will be chosen from 300 (or above) numbered courses which are closely allied to the student's professional field.

GROUP ELECTIVES

EC 202 Economics II	HY 431 History of Europe Since the Treaty of Versailles
EC 274 Statistics	HY 451 Japan and Southeast Asia
EC 457 Economic History of Europe	HY 460 Great Leaders of History
EC 458 Economic History of the U. S.	MN 442 Personnel Management
EC 402 American Industries	PA 325 Aesthetics
EC 452 Comparative Economic Systems	PA 420 Modern Philosophy
EC 460 Economic Development of the South	PG 330 Social Psychology
FL 121-2-221 French	PO 209 Intr. to American Government
FL 131-2-231 Spanish	SP 311 Essentials of Public Speaking
FL 241-2-341 Italian	SY 201 Introductory Sociology
FL 151-2-251 German	SY 203 Cultural Anthropology
GY 305 Geography of North America	SY 301 Sociology of the Family
HY 311 Medieval History	SY 304 Minority Groups
HY 400 American Colonial History	SY 401 Population Problems
HY 406-7 Recent United States History	SY 402 Social Theory
HY 404 The Civil War	SY 403 Contemporary Anthropology
HY 408 Modern America	SY 405 Urban Sociology
HY 426 The Reformation Era, 1500-1660	SY 408 Industrial Sociology
HY 428 The Age of Reason, 1660-1789	
HY 430 History of Europe from Bismarck through the First World War	

Department of Music

The Department of Music provides instruction and performing experience to students interested in developing their talents in music. The courses of study provided by the Department have been created to present a balance between creative skills and academic studies, allowing at the same time a certain flexibility to meet individual requirements.

The Department of Music offers to the Music major a professional curriculum leading to the degree Bachelor of Music, with majors in (A) Applied Music, (B) Theory and Composition, (C) Church Music. These programs provide preparation for the professional field of performance and for private or college teaching of applied music, theory, and composition. They also provide training for church organists and choir directors.

For the student wishing to major in Music History and Literature, the Department of Music offers a program of studies leading to the Bachelor of Arts degree. This degree is a cultural, not a professional degree.

Many general elective courses are available to all University students as well as courses in applied music in band and orchestral instruments, voice, piano, and organ. Performance groups such as the Marching and Concert Bands, Orchestra, Glee Clubs, Concert Choir, Choral Union, and Opera Workshop are also available to students in all curricula.

Professional Curriculum in Music (MU)

(A) Applied Music Major

FIRST YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101	English Comp. — 3	EH 102	English Comp. — 3	EH 103	English Comp. — 3
HY 101	World History — 3	HY 102	World History — 3	HY 103	World History — 3
MU 131	Mat. & Org. of Music — 5	MU 132	Mat. & Org. Mu. — 5	MU 133	Mat. & Org. Mu. — 5
MU 181	Applied Music (major) — 3	MU 182	Applied (major) — 3	MU 183	Applied (major) — 3
MU 187	Applied Music (minor) — 1	MU 188	Applied (minor) — 1	MU 189	Applied (minor) — 1
MU	Performing Group — 1	MU	Perf. Group — 1	MU	Perf. Group — 1
MU	Physical Education — 1	†Basic ROTC	— 1	†Basic ROTC	— 1
†Basic ROTC	— 1	PE	Physical Education — 1	PE	Physical Education — 1
PE	Physical Education — 1	MU 100	Convocation — 0	MU 100	Convocation — 0
MU 100	Convocation — 0				

SECOND YEAR

MU 231	Mat. & Org. of Music — 5	MU 232	Mat. & Org. Mu. — 5	MU 233	Mat. & Org. Mu. — 5
	Natural Science — 5	MU 282	Applied (major) — 3	MH 100	Mathematics — 5
MU 281	Applied Music (major) — 3	MU 288	Applied (minor) — 1	MU 283	Applied (major) — 3
MU 287	Applied Music (minor) — 1	MU	Perf. Group — 1	MU 289	Applied (minor) — 1
MU	Performing Group — 1	MU	Ensemble — 1	MU	Perf. Group — 1
MU	Ensemble — 1	†Basic ROTC	— 1	MU	Ensemble — 1
†Basic ROTC	— 1	MU 100	Convocation — 0	†Basic ROTC	— 1
MU 100	Convocation — 0			MU 100	Convocation — 0

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

THIRD YEAR

MU 331	Mat. & Org. Music — 5	MU 332	Mat. & Org. Mu. — 5	MU 333	Mat. & Org. Mu. — 5
PA 211	Philosophy — 3	PA 212	Philosophy — 3	MU 361	Conducting — 3
MU 351	Music History — 3	MU 352	Music History — 3	MU 353	Music History — 3
MU 381	Applied Music (major) — 3	MU 382	Applied (major) — 3	MU 383	Applied (major) — 3
MU	Ensemble — 1	MU	Ensemble — 1	MU 100	Convocation — 0
MU 100	Convocation — 0	MU 100	Convocation — 0		Elective (Soc. or Nat. Science) — 3
	Elective (Social or Natural Science) — 3		Elective (Soc. or Nat. Science) — 3		

FOURTH YEAR

FL	Foreign Language — 5	FL	Foreign Lang. — 5	FL	Foreign Language — 5
MU 481	Applied Music (major) — 3	MU 482	Applied (major) — 3	MU 483	Applied (major) — 3
MU 337	Modern Harmony — 3	MU	Pedagogy — 3	MU	Ensemble — 1
MU	Ensemble — 1	MU 185	Ensemble — 1	MU 186	Applied Music — 1
MU 100	Convocation — 0	MU 362	Conducting — 1	MU 100	Convocation — 0
	Elective (Social or Natural Science) — 6	MU 100	Convocation — 0		Elective — 3
			Elective — 3		

Total — 205 quarter hours

(B) Theory and Composition Major

FIRST YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101	English Comp. — 3	EH 102	English Comp. — 3	EH 103	English Comp. — 3
HY 101	World History — 3	HY 102	World History — 3	HY 103	World History — 3
MU 131	Mat. & Org. Music — 5	MU 132	Mat. & Org. Mu. — 5	MU 133	Mat. & Org. Mu. — 5
MU 184	Applied Music — 1	MU 185	Applied Music — 1	MU 186	Applied Music — 1
MU 116	Woodwind Instr. — 1	MU 117	Woodwind Instr. — 1	MU 118	WW Instr. — 1
MU 110	String Instr. — 1	MU 111	String Instr. — 1	MU 112	String Instr. — 1
†Basic ROTC	— 1	MU	Perf. Group — 1	MU	Perf. Group — 1
PE	Physical Education — 1	†Basic ROTC	— 1	†Basic ROTC	— 1
MU 100	Convocation — 0	PE	Physical Education — 1	PE	Physical Education — 1
		MU 100	Convocation — 0	MU 100	Convocation — 0

SECOND YEAR

MU 231	Mat. & Org. of Music — 5	MU 232	Mat. & Org. Mu. — 5	MU 233	Mat. & Org. Mu. — 5
	Natural Sciences — 5		Natural Science — 5	MH 100	Mathematics — 5
MU 284	Applied Music — 1	MU 285	Applied Music — 1	MU 286	Applied Music — 1
MU 113	Brass Instr. — 1	MU 114	Brass Instr. — 1	MU 115	Brass Instr. — 1
MU 107	Voice Class — 1	MU 108	Voice Class — 1	MU 119	Percussion In. — 1
PG 211	Psychology — 3	PG 212	Psychology — 3	MU	Perf. Group — 1
MU	Perf. Group — 1	MU	Perf. Group — 1	MU	Ensemble — 1
MU	Ensemble — 1	MU	Ensemble — 1	†Basic ROTC	— 1
†Basic ROTC	— 1	†Basic ROTC	— 1	MU 100	Convocation — 0
MU 100	Convocation — 0	MU 100	Convocation — 0		

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

THIRD YEAR

First Quarter		Second Quarter		Third Quarter	
MU 331	Mat. & Org. Music . . . 5	MU 332	Mat. & Org. Mu. . . 5	MU 333	Mat. & Org. Mu. . . 5
MU 351	Music History . . . 3	MU 352	Music History . . . 3	MU 353	Music History . . . 3
MU	Modern Harmony I . . . 3	MU	Modern Harm. II . . . 3	MU	Modern Harm. III . . . 3
MU 437	Orchestration . . . 3	MU 438	Orchestration . . . 3	MU 389	Applied Music . . . 1
MU 387	Applied Music . . . 1	MU 388	Applied Music . . . 1	MU	Perf. Group . . . 1
MU	Perf. Group . . . 1	MU	Perf. Group . . . 1	MU 100	Convocation . . . 0
MU 100	Convocation . . . 0	MU 100	Convocation . . . 0		Elective (Soc. or
	Elective (Soc. or		Elective (Soc. or		Nat. Science) . . . 6
	Nat. Science) . . . 3		Nat. Science) . . . 3		

FOURTH YEAR

MU 434	Music Comp.	3	MU 435	Music Comp.	3	MU 436	Music Comp.	3
FL	Foreign Language	5	FL	Foreign Language	5	FL	Foreign Language	5
MU 487	Applied Music	1	MU 488	Applied Music	1	MU 489	Applied Music	1
MU 439	Orchestration	3	MU 445	Theory Pedagogy	3	MU	Perf. Group	1
MU	Perf. Group	1	MU	Perf. Group	1	MU 100	Convocation	0
MU 100	Convocation	0	MU 100	Convocation	0		Elective	3
	Elective (Soc. or			Elective				
	Nat. Science)	6						

Total — 209 quarter hours

(C) Church Music Major

FIRST YEAR

First Quarter			Second Quarter			Third Quarter		
EH 101	English Comp.	3	EH 102	English Comp.	3	EH 103	English Comp.	3
HY 101	World History	3	HY 102	World History	3	HY 103	World History	3
MU 131	Mat. & Org. Music	5	MU 132	Mat. & Org. Mu.	5	MU 133	Mat. & Org. Mu.	5
MU 181	Applied Music	3	MU 182	Applied (major)	3	MU 183	Applied (major)	3
	(major)		MU 188	Applied (minor)	1	MU 189	Applied (minor)	1
MU 187	Applied Music	1	MU	Ensemble	1	MU	Ensemble	1
	(minor)		†Basic ROTC		1	†Basic ROTC		1
MU	Ensemble	1	PE	Physical Education	1	PE	Physical Education	1
†Basic ROTC		1	MU 100	Convocation	0	MU 100	Convocation	0
PE	Physical Education	1						
MU 100	Convocation	0						

SECOND YEAR

	Natural Science	5		Natural Science	5	MH 100	Mathematics	5
MU 231	Mat. & Org. Music	5	MU 232	Mat. & Org. Mu.	5	MU 233	Mat. & Org. Mu.	5
MU 281	Applied Music	3	MU 282	Applied (major)	3	MU 283	Applied (major)	3
	(major)		MU 288	Applied (minor)	1	MU 289	Applied (minor)	1
MU 287	Applied Music	1	MU	Ensemble	1	MU	Ensemble	1
	(minor)		†Basic ROTC		1	MU 100	Convocation	0
MU	Ensemble (or	1	MU 100	Convocation	0		Elective	3
	MU 211)							
†Basic ROTC		1				†Basic ROTC		1
MU 100	Convocation	0						

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

THIRD YEAR

PA 211	Philosophy	3	PA 212	Philosophy	3	MU 353	Music History	3
MU 351	Music History	3	MU 352	Music History	3	MU 353	Mat. & Org. Mu.	5
MU 331	Mat. & Org. Music	5	MU 332	Mat. & Org. Mu.	5	MU 383	Applied (major)	3
MU 381	Applied Music	3	MU 382	Applied (major)	3	MU	Ensemble	1
	(major)		MU 311	Liturgies	3	MU 100	Convocation	0
MU 312	Hymnology	3	MU	Ensemble	1		Elective (Soc. or	
MU	Ensemble	1	MU 100	Convocation	0		Nat. Science)	6
MU 100	Convocation	0						

FOURTH YEAR

FL	Foreign Language	5	FL	Foreign Language	5	FL	Foreign Language	5
MU 361	Conducting	3	MU 415	Organ Lit.	3	MU 416	Church Mu.	3
MU 481	Applied Music	3		or			Seminar	3
	(major)			Vocal Pedagogy		MU 483	Applied (major)	3
MU	Ensemble	1	MU 482	Applied (major)	3	MU	Ensemble	1
MU 100	Convocation	0	MU 362	Conducting	3	MU 453	Choral Lit.	3
	Elective (Soc. or		MU	Ensemble	1	MU 100	Convocation	0
	Nat. Science)	6	MU 100	Convocation	0			
				Elective (Soc. or				
				Nat. Science)	3			

Total — 210 quarter hours

Bachelor of Arts

FIRST YEAR

First Quarter

MU 131	Mat. & Org. Music	5
EH 101	English Comp.	3
HY 101	World History	3
MU 184	Applied Music	1
MU	Ensemble	1
†Basic ROTC		1
PE	Physical Education	1
MU 100	Convocation	0

Second Quarter

MU 132	Mat. & Org. Mu.	5
EH 102	English Comp.	3
HY 102	World History	3
MU 185	Applied	1
PA 211	Philosophy	3
MU	Ensemble	1
†Basic ROTC		1
PE	Physical Education	1
MU 100	Convocation	0

Third Quarter

MU 133	Mat. & Org. Mu.	5
EH 103	English Comp.	3
HY 103	World History	3
MU 186	Applied	1
MU	Ensemble	1
MH 100	Mathematics	5
†Basic ROTC		1
MU 100	Convocation	0

SECOND YEAR

MU 231	Mat. & Org. Music	5
	Natural Science	5
EH 253	English Lit.	3
MU 284	Applied Music	1
MU	Ensemble	1
†Basic ROTC		1
PE	Physical Education	1
MU 100	Convocation	0

MU 232	Mat. & Org. Mu.	5
	Natural Science	5
EH 253	English Lit.	3
MU 285	Applied	1
MU	Ensemble	1
†Basic ROTC		1
MU 100	Convocation	0

MU 233	Mat. & Org. Mu.	5
EH 255	English Lit.	3
MU 286	Applied	1
MU	Ensemble	1
AT 338	Art History	5
†Basic ROTC		1
MU 100	Convocation	0
	Elective	3

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

THIRD YEAR

MU 331	Mat. & Org. Music	5
MU 351	Music History	3
*MU 384	Applied Music	1
PA 212	Philosophy	3
MU 100	Convocation	0
	Academic Minor	5

MU 332	Mat. & Org. Mu.	5
MU 352	Music History	3
MU 385	Applied	1
MU 100	Convocation	0
	Academic Minor	5
	Elective (Soc. or Nat. Science)	3

MU 333	Mat. & Org. Mu.	5
MU 353	Music History	3
MU 386	Applied	1
MU 100	Convocation	0
	Academic Minor	5
	Elective (Soc. or Nat. Science)	3

FOURTH YEAR

PG 211	Psychology	5
MU 489	Applied Music	1
FL	Foreign Language	5
MU 100	Convocation	0
	*Academic Minor	5
	Elective (Soc. or Nat. Science)	3

MU 361	Conducting	3
MU 485	Applied	1
FL	Foreign Language	5
MU 100	Convocation	0
	Academic Minor	5
	Elective (Soc. or Nat. Science)	3

MU 486	Applied	1
FL	Foreign Language	5
MU 100	Convocation	0
	Academic Minor	5
	Elective (Soc. or Nat. Science)	3

Total — 205 quarter hours

*A minor of 30 quarter hours elected from approved courses.

Keyboard proficiency is required for non-keyboard majors. In such cases three of the applied music credits will be taken in piano.

Supplementary Requirements for Bachelor of Music and Bachelor of Arts Degree Candidates

1. Attendance at campus music functions and student convocations is compulsory. Absences may be excused only by the Head of the Music Department.

2. At the end of the Sophomore year a comprehensive examination will be given which must be passed before the student is admitted to the upper division music courses.

3. A. Students electing the applied music major must present a junior recital during the third year of study and a senior recital during the fourth year of study.

B. Students electing the theory and composition major must present an original composition in small form during the third year of study and an original composition in large form during the fourth year of study.

C. Students electing the history and literature major must present a written thesis during the fourth year of study.

D. Students electing the church music major must present a senior recital during the fourth year of study.

4. Credit in applied music is based on the amount of practice, each credit hour requiring a minimum of five hours practice per week.

5. Students whose major performing medium is not piano or organ must elect piano as the minor instrument. Before graduation all students must meet minimum Sophomore NASM applied music requirements in piano.

6. Participation in an approved music performing group is required each quarter, with or without credit.

7. All students taking applied music must meet public performance requirements as designated by the faculty. (See Music Dept. special regulations regarding requirements for jury examinations and convocation performances.)

Music Education

Teacher Education: Admission to the Teacher Education Program of the School of Education is open to students registered in the School of Architecture and Fine Arts to the same extent that it is open to students registered in the School of Education. Upon completion of all requirements of both the Teacher Education Program and the professional curriculum in music, the Dean of the School of Education will recommend to the appropriate State Department of Education that a professional certificate be issued. It is considered desirable for students who wish to engage in junior high or high school teaching to identify this objective as soon as possible in their four-year undergraduate work. Such students will be advised by two advisers, a professional education adviser in the School of Education and an academic adviser in the Department of Music. The advisers will counsel in their respective areas. Flexibility in scheduling student course requirements is to be permitted in the pursuit of the requirements for both the curriculum in music and Teacher Education training.

Music Organizations

Several musical organizations, sponsored by the University and directed by the Department of Music, provide excellent training in group music. See index under "Organizations." These activities, which are open to students of the University, may be taken with or without credit.

Graduate Work in Music

Students who hold a baccalaureate degree in Education with a Major in Music are eligible to apply to the Dean of the Graduate School for admission to the graduate courses leading to the degrees Master of Science and Master of Education with Major in Music. The candidate must complete satisfactorily the following curriculum totaling 45 quarter hours.

Education and Foundation Courses	15
Music and Music Education Courses	30

Department of Theatre

The purpose of the curriculum in theatre is to develop creative and professionally knowledgeable practitioners and teachers of the art. The program is organized to provide the prospective artist or artist/teacher a broad range of theatre experience which will enable him to identify and begin initial concentration on the area or areas of his particular ability.

Theatre training experiences are ordered in the following manner:

(1) An introductory year of study and testing. (2) A year devoted to the study and practice of performing. (3) A year devoted to all aspects of the performer's design environment. (4) A fourth year in which the student concentrates primarily on directing.

Particular attention is given to those students who plan to teach in elementary and secondary schools. These students are encouraged to complete the Department's courses in Children's Theatre, Creative Dramatics and Theatre in the Schools.

The Department offers a B.A. degree with a major in Theatre, which may also be taken as a major or minor in the School of Education or as a minor in any of the three options in the School of Arts and Sciences. Participation in the theatre season of plays is required of all majors and minors enrolled in the Department. The Department also offers general elective courses in Theatre practice and theory.

Curriculum in Theatre (TH)

FIRST YEAR		
First Quarter	Second Quarter	Third Quarter
EH 101 English Comp. 3	EH 102 English Comp. 3	EH 103 English Comp. 3
HY 101 World History 3	HY 102 World History 3	HY 103 World History 3
BI 101 Prin. of Biology 5	BI 104 Biology in Human Affairs 5	PA 210 Intr. to Philosophy 3
BI 101L Gen. Prin. of Biology Lab.	TH 102 Intr. to the Arts 1	TH 103 Intr. to the Arts 1
TH 101 Intr. to the Arts 1	TH 105 Intr. to Theatre II 3	TH 106 Intr. Theatre Projects 3
TH 104 Intr. to Theatre I 3	TH 108 Stage Craft II 1	TH 109 Stage Craft Project 1
TH 107 Stage Craft I 1	†Basic ROTC 1	†Basic ROTC 1
†Basic ROTC 1	PE Physical Education 1	PE Physical Education 1
PE Physical Education 1		
SECOND YEAR		
TH 204 Fund. of Acting I: Voice 5	TH 205 Fund. of Acting II: Movement 5	TH 206 Acting I 5
TH 201 Theatre Artist in Society I 3	TH 202 Theatre Artist in Society II 3	TH 203 Theories of Acting 3
PA 211 Intr. to Deductive Logic 3	PG 211 Psychology I 3	PG 212 Psychology II 3
FL 121 Elem. French 5	FL 122 Elem. French 5	FL 221 Inter. French 5
†Basic ROTC 1	†Basic ROTC 1	†Basic ROTC 1
THIRD YEAR		
TH 304 Fund. Stage Design 5	TH 305 Design in the Theatre I 5	TH 306 Design in the Theatre II 5
TH 301 Hist. of Theatre in Western Civilization 3	TH 302 Hist. of Theatre in Western Civilization 3	TH 303 Hist. of Theatre in Western Civilization 3
EH 253 English Lit. 3	EH 254 English Lit. 3	EH 255 English Lit. 3
AT 338 Art History I 5	AT 339 Art History II 5	EH 332 Hist. of Eng. Drama 3
MU 373 Apprec. of Music 3	MU 374 Masterpieces of Music 3	TH Elective 3
FOURTH YEAR		
TH 404 Directing I 5	TH 405 Directing II 5	TH 406 Directing III 5
TH 401 Play Analysis 3	TH 402 World Theatre 3	TH 403 Seminar in Theatre Research 3
TH Elective 5	Elective 5	Elective 5
TH Elective 3	Elective 3	Elective 3
TH 199 Theatre Lab. 2	TH 199 Theatre Lab. 2	Elective 3

Total — 210 quarter hours

†Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

School of Arts and Sciences

EDWARD H. HOBBS, *Dean*

LESLIE CAMPBELL, *Assistant Dean*

IN THE SCHOOL OF ARTS AND SCIENCES a student can gain a broad general education and also acquire depth in the particular field in which he majors. This combination equips him with a strong foundation for post-baccalaureate specialization in graduate studies or professional school. A further function of this school is to provide courses which are needed by students of all other instructional divisions of the University to meet their various educational objectives.

The School of Arts and Sciences traces its origin to 1859 and the Academic Faculty of East Alabama Male College, predecessor of Auburn University. It was known as the School of Science and Literature from 1929 to 1968, when it became the School of Arts and Sciences. Three academic areas — humanities, physical sciences, and social sciences — are represented by the School's 12 departments — Chemistry, English, Foreign Languages, Geology, History, Mathematics, Philosophy, Physics, Political Science, Psychology, Sociology, and Speech.

Three Curriculum Areas

The School of Arts and Sciences offers four-year bachelor's degree programs in three curriculum areas: (1) *general*, (2) *pre-professional*, and (3) *special*.

The *General Curriculum* offers options in 16 major fields, with a wide choice of minors available both within the School of Arts and Sciences and in other schools of the University.

Pre-professional Programs are offered in pre-law, pre-medicine, pre-dentistry, pre-pharmacy, pre-optometry, pre-therapy, and pre-veterinary medicine.

Special Curricula are available in chemistry, geology, laboratory technology, law enforcement, mathematics, physics, and applied physics.

Liberal Education Program

If the student follows the curricula offered by the School of Arts and Sciences, the basic requirements of the Liberal Education Program will be met.

Advisory Services for Students

The head of the department (or his designate) in which the student majors becomes the student's adviser and is charged with the responsibility of outlining the student's major and minor work. The Office of the Dean, however, provides counseling services to the student before he declares a major. For pre-professional students, counseling on professional school admission tests, admissions

requirements and other such matters is provided as follows: Pre-dental-Premedical Advisory Committee for pre-medical and pre-dental students; the Pre-Law Advisers; the Pre-Pharmacy Adviser; and the Pre-Veterinary Medicine Advisers. Advisory services for special curricula and for the Teacher Education Program are provided by the appropriate departments.

Teacher Education

A student in the School of Arts and Sciences may prepare for a career as a secondary school teacher with a major in biology, chemistry, economics, English, foreign language, geography, history, mathematics, physics, political science, speech, or sociology. Admission to the Teacher Education Program of the School of Education is open to students registered in the School of Arts and Sciences to the same extent that it is open to students registered in the School of Education. Upon completion of all requirements of both the Teacher Education Program and the General Curriculum, the Dean of the School of Education will recommend to the appropriate State Department of Education that a professional certificate be issued.

It is considered desirable for students who wish to engage in junior high or senior high school teaching to identify this objective as soon as possible in their four-year undergraduate work. Such students will be advised by two advisers, a professional education adviser in the School of Education and an academic adviser in the School of Arts and Sciences. The advisers will counsel in their respective areas. Flexibility in scheduling student course requirements is to be permitted in the pursuit of the requirements for both the General Curriculum and Teacher Education training.

Cooperative Education Programs

Cooperative Education Programs which give students an opportunity to integrate their academic training with work experience are offered in mathematics, physics, and applied physics. Students alternate each quarter between school and a work assignment provided through the Director of the Cooperative Education Program. For further information about this program, interested students should write to the Director, Cooperative Education, Auburn University, Auburn, Alabama 36830. (See page 44.)

Graduate Degrees

Master of Arts degrees are offered in the areas of English, history, political science, Spanish, and speech. Master of Science degrees are offered in the areas of chemistry, mathematics, physics, and psychology. In addition, a Master of Political Science degree is offered at Air University in Montgomery, Alabama, through the Department of Political Science of Auburn University, and the School of Arts and Sciences participates in the offering of two interdisciplinary degrees, Master of Arts in College Teaching and Master of Urban and Regional Planning. Doctor of Philosophy degrees are offered in the areas of chemistry, English, history, mathematics, physics, and psychology. Degree programs are described in the *Graduate School Bulletin*.

The General Curriculum (GC)

The general curriculum is designed to broaden the student through the humanities and the natural and social sciences. It also serves as a base for the majors listed below.

FRESHMAN YEAR		
First Quarter		Second Quarter
FL I	Foreign Language* 5	FL II Foreign Language* 5
	Group Requisite I 3-5	Group Requisite I 3-5
EH 101	English Composition 3	EH 102 English Composition 3
HY 101	World History 3	HY 102 World History 3
	Basic ROTC** 1	Basic ROTC** 1
PE	Physical Education 1	PE Physical Education 1
SOPHOMORE YEAR		
PO 209	American Govt. 5	PO 210 State & Local Govt. 5
	Group Requisite II 3-5	Group Requisite II 3-5
	Group Requisite III 5	Group Requisite III 5
EH	Literature*** 3	EH Literature*** 3
	Basic ROTC** 1	Basic ROTC** 1
SY 201	Intr. Sociology 5	SY 201 Intr. Sociology 5
	Group Requisite II 3-5	Group Requisite II 3-5
	Group Requisite IV 3-5	Group Requisite IV 3-5
	Literature*** 3	Literature*** 3
	Basic ROTC** 1	Basic ROTC** 1

JUNIOR AND SENIOR YEARS

During the junior and senior years the student is to complete his major requirements of at least 35 hours, two minors of at least 15 hours each (or a double minor of at least 30 hours), and elective work to total 201 hours. All major and minor courses are to be numbered 200 or above.

Total — 201 quarter hours

GROUP REQUISITES

GROUP REQUISITE I. The student will take mathematics courses which are requisites to his major program. (See Special Requirements for Departmental Majors, below.) If none is required, he may select one course from: MH 100, MH 159, MH 160, MH 161 or one natural science course, and two courses from: PA 202, PA 210, PA 211, PA 212, PA 214, PA 216. Or he may complete Group Requisite I in two quarters and use the remaining quarter as an elective by taking the sequence MH 159-161; or the sequence MH 160-161; or one natural science course and one mathematics course (MH 100, MH 159, MH 160, or MH 161).

GROUP REQUISITE II. The student will choose from the following: CH 101-102-104 (including labs), CH 103-104-105 (including labs), CH 111-112-113, HY 201, HY 202, MH 163, MH 220, MH 221, PA 210, PA 211, PG 211, PG 212, FED 213, FED 214, FED 320, GY 102, GY 203, EC 200, JM 221, SP 202, foreign language, political science (300 level).

GROUP REQUISITE III. A minimum of 10 hours in one science, including corresponding laboratories, from the following: BI 101-102, BI 101-103, BI 101-104, CH 101-102-104, CH 103-104, GL 101-102, PS 205-206, or PS 220-221-222.

GROUP REQUISITE IV. A course (3-5 hours) in music, theatre, art, speech, or journalism.

FOREIGN LANGUAGE, LITERATURE AND ROTC

***FOREIGN LANGUAGE.** Fifteen hours are required in the same language. A student who has satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

****BASIC ROTC.** Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

***LITERATURE. The student will take English Literature, EH 253-254-255; or Literature of the Western World, EH 260-261-262.

Majors and Minors in the General Curriculum

A student undecided about a major may delay declaring one until the end of his fifth quarter. Before a major is declared, his curriculum will be identified by the symbol GC (General Curriculum). As soon as he is reasonably certain, however, he should declare his major and identify it by the appropriate departmental symbol.

GC — MAJOR UNDECLARED

Bachelor of Arts

GEH—ENGLISH

GFL—FOREIGN LANGUAGE

GHY—HISTORY

GJM—JOURNALISM

GPA—PHILOSOPHY

GPO—POLITICAL SCIENCE

GPG—PSYCHOLOGY

GSP—SPEECH

GSY—SOCIOLOGY

Bachelor of Science

GBI—BIOLOGY

GCH—CHEMISTRY

GEC—ECONOMICS

GGL—GEOLOGY

GGY—GEOGRAPHY

GMH—MATHEMATICS

GPS—PHYSICS

Since some of the above majors require alignment of courses beginning in the freshman and sophomore years, it is important that the student be alert early in his college career to all of the requirements of his major which appear under Special Requirements for Departmental Majors.

Students who choose one of the above majors will select two minors (minimum of 15 hours credit in each) or one double minor (minimum of 30 hours credit) from the following: architecture, art, botany, chemistry, theatre, economics, English, foreign language, geography, geology, history, journalism, mathematics, music, philosophy, physical education, physics, political science, psychology, sociology, speech, zoology, and approved subjects in the Schools of Agriculture, Business, Education, Engineering, or Home Economics. All major and minor courses must be numbered 200 or above. A student cannot major and minor in the same field (except in foreign language; see page 92).

Special Requirements for Departmental Majors

Students in these majors should consult with their advisers regularly to plan their major work, clear prerequisites, and take their major courses according to departmental schedule. A minimum of 35 hours is required in each major and 15 in each minor. All courses must be numbered 200 or above.

THE BIOLOGY MAJOR (GBI). The Arts and Sciences student selecting a major in biology will take BI 101-102-103, CH 103-104-105, including labs, and MH 160-161 among his requisites; and CH 207-208-209, PS 205-206 among his requisites or on his minors. The *major* will include BY 306, BY 406, ZY 300, ZY 310, and VM 200 plus 10 additional hours to be chosen from the following: BY 309, BY 405, BY 410, BY 411, BY 413, BY 414, BY 415, BY 416, ZY 301, ZY 302, ZY 303, ZY 304, ZY 306, ZY 308, ZY 401, ZY 409, ZY 411, ZY 420, ZY 421-422, ZY 424, and ZY 450. (See also Special Curriculum in Biology in the School of Agriculture.)

THE CHEMISTRY MAJOR (GCH). The student selecting a chemistry *major* under the General Curriculum will take CH 103, CH 104, CH 105 and labs (or

CH 111-112-113), MH 160-161-162 among his requisites; and PS 205-206 (or PS 220-221-222) among his requisites or on a minor. The major will include CH 204-205, CH 207-208-209 plus 10 additional hours of chemistry on the 300-400 level. (See also Special Curriculum in Chemistry.)

THE ECONOMICS MAJOR (GEC). The Arts and Sciences student selecting a *major* in economics will take MH 159-161 or MH 160-161 during his freshman year, EC 200 during his sophomore year, and IE 301 during his junior or senior year. In addition the major will include EC 202, EC 274, EC 360, EC 451, and EC 456, plus 10 additional hours to be chosen from the following: EC 350, EC 444, EC 445, EC 446, EC 452, EC 453, EC 454, EC 457, EC 458, EC 462, EC 465, EC 471, EC 485, AS 460, MT 472. (See also Curriculum in Economics in the School of Business.)

THE ENGLISH MAJOR (GEH). The *major* will take EH 253-254-255, twenty hours of foreign language preferably in one language, and five hours of history (English or European). In addition, the student should work out a balanced program with his English faculty adviser. This program should include: (a) EH 390, EH 401, or EH 441; (b) three courses selected from different periods, each of the three emphasizing a different type of literature (i.e. fiction, poetry, drama); (c) three survey or period courses dealing with the literature of different ages.

THE FOREIGN LANGUAGE MAJOR (GFL). A *major* will consist of 35 hours in one language at a level higher than the initial three quarters (15 hours) offered by the Department of Foreign Languages. A student who begins his foreign language studies at the elementary level at Auburn will therefore take a total of 50 hours (35 plus 15). A student who begins his foreign language major at an intermediate level because of high school units earned in the same language need not take further elementary level courses. A *minor* will consist of 15 hours in one language at a level higher than the initial three quarters (15 hours). A student who begins his foreign language studies at the elementary level at Auburn will take a total of 30 hours (15 plus 15). A student who begins his foreign language minor at an intermediate level because of high school units earned in the same language need not take further elementary level courses. A student who majors in a foreign language and minors in another may satisfy both requirements with a total of up to 70 hours; for example, 40 hours in his major and 30 hours in his minor (including the initial 15 hours offered in each language), or in any other combination approved by his foreign language adviser and the Dean on the basis of prior high school units. In no instance may more than 70 hours of foreign languages be used toward a bachelor's degree.

THE GEOGRAPHY MAJOR (GGY). A *major* in geography will take GY 102 and GY 203 in Group Requisite II and, in addition, a minimum of 35 hours in geography courses including GY 201, GY 305, GY 404, and GY 405. (See also Curriculum in Geography in the School of Business.)

THE GEOLOGY MAJOR (GGL). This major leads to the Bachelor of Arts degree in geology, and is designed for the student who wishes to combine fields such as law, library science, education, art, English, journalism, and sociology with a geology major. This combination will prepare the student for a job specialty such as technical consultant in corporation or private law practice, scientific or technical librarian, science teacher, geological illustrator, or geological editor. The demands for individuals to fill such positions are more numerous today than ever before and are expected to increase.

The student selecting a *major* in geology shall take (1) a minimum of 35 hours in geology courses numbered at the 200-level or above, (2) mathematics through MH 163, (3) a minimum of one year each in two of the following: (a) biological sciences, (b) chemistry, or (c) physics (students selecting the sequence PS 220-221-222 should also take MH 264). Minor sequences (see page 101) should be chosen with the advice and consent of the departmental adviser so as to strengthen the student's major field and/or area of intended specialization in employment after graduation. (See also Special Curriculum in Geology.)

A *minor* in geology consists of 15 hours of (1) GL 301 and GL 302 and either GL 401, GL 402, or GL 403, or (2) some combination of GL 310 with GL 311, GL 312, or GL 401. Other combinations of courses may prove satisfactory as a minor, if undertaken with the advice and approval of a departmental adviser.

THE HISTORY MAJOR (GHY). A *major* must include HY 201-202. The student should consult the History Department each quarter of the junior and senior years regarding completion of his major and minor fields.

THE JOURNALISM MAJOR (GJM). Thirty-six hours of course work in journalism are required for the *major*. JM 221, JM 223, JM 224, JM 322 and JM 421 must be taken by all majors. The additional 11 hours must include either JM 323 or JM 465 plus JM 422, JM 423 (Journalism Workshop, six hrs.), or JM 425 (Journalism Internship, six hrs.). Students majoring or minoring in journalism should consult the journalism faculty about their programs of study. JM 221 should be scheduled during the sophomore year.

THE MATHEMATICS MAJOR (GMH). A *major* in mathematics should take MH 160 or MH 161, as appropriate, during his first quarter and complete the freshman calculus sequence MH 161-162-163 as early in his program as possible. He then will meet his major requirements by following one of two plans. **Plan I** is oriented toward theoretical mathematics and under it a student must select at least seven courses appearing in the last three years of the mathematics curriculum on page 104. This plan may be used to prepare for graduate study in mathematics. Under **Plan II** a student must take MH 220, MH 221, MH 265, MH 266, MH 331, MH 405, MH 460 or MH 461, and MH 467. This program provides appropriate preparation in mathematics for a computer-related career. A suitable minor may be based on courses taught in the School of Engineering. A mathematics *minor* will involve a minimum of 15 hours in 200-level courses or above, but may not include courses numbered in the 280's or 480's. (See also Special Curriculum in Mathematics.)

THE PHILOSOPHY MAJOR (GPA). The student who wishes to major in philosophy will take PA 210 and 211 during his freshman or sophomore year. In addition, the *major* will include 35 hours in philosophy courses above the 200 level. Majors should consult with the department concerning specific courses, minor areas, and electives. A philosophy *minor* will include 15 hours above the 200 level. The student wishing to major in philosophy must have his program specifically approved by his departmental adviser.

THE PHYSICS MAJOR (GPS). The student selecting a major in physics will take mathematics through MH 163 in his freshman and sophomore year, and MH 264 among his electives or on a minor. While not required, MH 265 and MH 266 are recommended during his junior year. Ten hours in another natural science (with laboratory) must be completed. The *major* will include PS 205-

206, and PS 210 (or PS 220-221-222, and PS 320), PS 217, PS 300, PS 301 or PS 302, PS 303 or PS 304, and PS 305. A *minor* consists of PS 205, PS 206, and PS 210, (or PS 220, PS 221, PS 222, and PS 320). (See also Special Curricula in Physics and Applied Physics.)

THE POLITICAL SCIENCE MAJOR (GPO). The *major* will consist of 35 hours of political science beyond the 200 level of which at least 10 hours must be at the 400 level.

THE PSYCHOLOGY MAJOR (GPG). A *major* will take 36 hours of psychology which will include PG 211-212, PG 215, at least nine hours of experimental psychology, and 16 hours of psychology courses at the 400 level. In addition he must complete MH 161 and preferably MH 162, as well as VM 220-221 or other science requisites approved by his adviser.

THE SOCIOLOGY MAJOR (GSY). A *major* in sociology will consist of a minimum of 40 hours of sociology courses following SY 201. These courses must include SY 202, SY 203, SY 220, and SY 309. In the selection of the remaining sociology courses to complete the major, the student is encouraged to consult with faculty members in the Department so as to take those courses most helpful for the attainment of the student's particular objectives.

THE SPEECH MAJOR (GSP). The areas of speech are (a) fundamentals, (b) public address, (c) interpretation, (d) television-radio-film, (e) audiology and speech pathology, and (f) group methods. A student may elect to pursue a general course of study by taking SP 200, SP 201, SP 202 and 25 additional hours with at least one course in the areas of c, d, e, and f; or he may emphasize audiology and speech pathology by taking SP 200, SP 201, SP 202 and 25 additional hours primarily in area e; or he may emphasize television-radio-film by taking SP 201, SP 202, SP 230, SP 235, SP 234 or SP 236 or SP 338, SP 436 or SP 438 or SP 439, and five hours in area a, c, or f.

Pre-Professional Curricula

Curriculum in Pre-Law (PL)

The pre-law curriculum is designed to prepare students for accredited professional law schools, most of which require for admission a bachelor's degree, a good scholastic record, and a good score on the national Law School Admission Test. The pre-law student should take the LSAT at least nine months ahead of the date when he expects to enter law school.

A pre-law student who is able to gain admission into an accredited law school short of a degree may obtain a combination bachelor's degree by completing the first three years of this curriculum (including the special requirements listed below) and the freshman year of law school.

FRESHMAN AND SOPHOMORE YEARS

The student will follow the General Curriculum, with the provision that he earn credit for EC 200 as Group Requisite II.

JUNIOR AND SENIOR YEARS

During the junior and senior years, the pre-law student should complete his major requirements of at least 35 hours, two minors of at least 15 hours each, or a double minor of at least 30 hours, and additional work to total 201 hours including EC 202, ACF 215, EH 390, HY 306, HY 471, PO 401, and SP 202. Recommended in addition to these are SP 278 and an additional course in political science.

Total — 201 quarter hours

Majors in the Pre-Law Curriculum

The pre-law adviser will guide the student concerning law school admission requirements, and the department in which the student majors will advise him in his major work.

PL — UNDECLARED MAJOR

Bachelor of Arts

LEH—ENGLISH

LFL—FOREIGN LANGUAGE

LHY—HISTORY

LJM—JOURNALISM

LPA—PHILOSOPHY

LPO—POLITICAL SCIENCE

LPG—PSYCHOLOGY

LSP—SPEECH

LSY—SOCIOLOGY

Bachelor of Science

LBI—BIOLOGY

LCH—CHEMISTRY

LGL—GEOLOGY

LEC—ECONOMICS

LGY—GEOGRAPHY

LMH—MATHEMATICS

LPS—PHYSICS

Upon selection of a major, a student should check over all of its requirements and utilize Group Requisites I, II, III, and IV as much as possible to clear lower level requisites during his freshman and sophomore years. (See Special Requirements for Departmental Majors.)

Curriculum in Pre-Dentistry (PD) and Pre-Medicine (PM)

This curriculum leads to a Bachelor of Science degree and is designed to prepare students for the rigorous demands of American medical and dental schools. The requirements are very exacting and demand high scholastic competence and performance. Students must strive for a B-plus four-year college record to attain good promise of being selected by a medical or dental school.

The bachelor's degree is required by most dental and medical schools for admission; however, if a student is able to enter a dental or medical school prior to graduation, he may receive a combination B.S. degree by completing successfully the first nine quarters of this curriculum and the freshman year of professional school.

The Predental-Premedical Advisory Committee will guide the pre-dental or pre-medical student concerning dental and medical school admission requirements, but the department in which the student majors will guide him in his major work. A student in pre-dentistry or pre-medicine should take the national Dental Aptitude Test or the Medical College Admission Test at least a year in advance of the date he plans to enter professional school, and follow with an application to the professional school of his choice. The student should seek information from the Predental-Premedical Advisory Committee concerning procedures he must follow to obtain the necessary committee evaluation and recommendation to the professional school to which he seeks admission early in his junior year. Forms and instructions are available in the office of the Dean of Arts and Sciences.

FRESHMAN YEAR

First Quarter

CH 103	Fund. Chem. & Lab.	5
MH 161	An. Geom. & Cal.	1 5
EH 101	English Comp.	3
HY 101	World History	3
	Basic ROTC*	1
PE	Physical Education	— 1

Second Quarter

CH 104	Fund. Chem. & Lab.	5
MH 162	An. Geom. & Cal.	5
	II	5
EH 102	English Comp.	3
HY 102	World History	3
	Basic ROTC*	1
PE	Physical Education	— 1

Third Quarter

CH 105	Fund. Chem. & Lab.	5
MH 163	An. Geom. & Cal.	5
	III	5
EH 103	English Comp.	3
HY 103	World History	3
	Basic ROTC*	1
PE	Physical Education	— 1

SOPHOMORE YEAR

First Quarter		Second Quarter		Third Quarter	
BI 101	Prins. Biol. & Lab. 5	BI 102	Plant Biology & Lab. 5	BI 103	Animal Biol. & Lab. 5
CH 207	Organic Chemistry 5	CH 208	Organic Chemistry 5	CH 209	Organic Chemistry 5
PS 205	Intr. Physics 5	PS 206	Intr. Physics 5	PS 210	Modern Physics 5
EH	Literature** 3	EH	Literature** 3	EH	Literature** 3
	Basic ROTC* 1		Basic ROTC* 1		Basic ROTC* 1

JUNIOR YEAR

CH 204	An. Chem. I & Lab. 5	CH 316	Phys. Chem. & Lab. 5	CH 317	Phys. Chem. & Lab. 5
PA	Philosophy 3-5	ZY 302	Vert. Embryology 5	ZY 300	Genetics 5
	Group Req. or Maj. 5		Group Req. or Maj. 5		Group Req. or Maj. 5
EH 141	Medical Vocabulary 3	HY 306	Contemp. Affairs 3	PG 211	Psychology I 3

SENIOR YEAR

EH 390	Adv. English Comp. 5	PO 401	Amer. Const. Law. 5		Group Req. or Maj. 5
PO 209	American Gov't. 5	SY 201	Intr. Sociology 5		Group Req. or Maj. 5
	Group Req. or Maj. 5		Group Req. or Maj. 5		Elective 5

Total — 209 quarter hours

GROUP REQUISITES

GROUP REQUISITES (minimum 35 hours). EC 200, EC 202, ***FL (a minimum of 15 hours in the same language), GL 101, GL 102, IE 301, MH 264, MH 265, PA 202, PA 210, PG 212, PG 330, SP 202, SY 202, SY 203, SY 207, VM 200, ZY 301, ZY 310, ZY 420, ZY 424, and/or up to 10 hours of 300-400 level courses in English, history, philosophy, political science, and sociology.

*Voluntary. Students not taking Basic ROTC will substitute electives from the social sciences, humanities, and/or fine arts. In such cases, these electives may be delayed until the senior year.

**EH 253-254-255 or EH 260-261-262.

***Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

TECHNICAL OPTION: Pre-dental and pre-medical students who prefer a more technical undergraduate education should continue mathematics through MH 264, substitute CH 111-112-113 for CH 103-104-105; take CH 205 to follow CH 204; substitute PS 220-221-222 for PS 205-206-210; and CH 407-408-409 for CH 316-317, the extra courses being used as Group Requisites. The remaining requirements should be chosen from the humanities, social sciences, and fine arts to avoid sacrificing the liberal education required by the professional schools.

MAJOR OPTION: Professional schools are becoming increasingly interested in students who reach some degree of depth especially in a non-medical related discipline. Accordingly, majors are offered in the humanities and social sciences as well as the natural sciences, all leading toward the B.S. degree, as follows:

Pre-Dentistry

PD—MAJOR UNDECLARED
 DBI—BIOLOGY
 DCH—CHEMISTRY
 DEC—ECONOMICS
 DEH—ENGLISH
 DFL—FOREIGN LANGUAGE
 DGL—GEOLOGY
 DGY—GEOGRAPHY
 DHY—HISTORY
 DJM—JOURNALISM
 DMH—MATHEMATICS
 DPA—PHILOSOPHY

Pre-Medicine

PM—MAJOR UNDECLARED
 MBI—BIOLOGY
 MCH—CHEMISTRY
 MEC—ECONOMICS
 MEH—ENGLISH
 MFL—FOREIGN LANGUAGE
 MGL—GEOLOGY
 MGY—GEOGRAPHY
 MHY—HISTORY
 MJM—JOURNALISM
 MMH—MATHEMATICS
 MPA—PHILOSOPHY

Pre-Dentistry

DPO—POLITICAL SCIENCE
 DPG—PSYCHOLOGY
 DPS—PHYSICS
 DSP—SPEECH
 DSY—SOCIOLOGY

Pre-Medicine

MPO—POLITICAL SCIENCE
 MPG—PSYCHOLOGY
 MPS—PHYSICS
 MSP—SPEECH
 MSY—SOCIOLOGY

A student electing a major under this option should become acquainted with the special requirements for his major on pages 91-94 as early as possible, as some majors require alignment of courses beginning in the freshman, sophomore, or junior years.

PRE-OPTOMETRY OPTION: May be worked out with the Dean's Office.

PRE-THERAPY OPTION: May be worked out with the Dean's Office.

Curriculum in Pre-Pharmacy (PPY)

The curriculum in pre-pharmacy is designed to meet the requirements for admission to the Auburn University School of Pharmacy, which is fully accredited by the American Council on Pharmaceutical Education. Complete information about the professional curriculum in pharmacy may be found on page 171.

To gain admission to the professional curriculum, a student must complete the basic two-year requirements below with a 1.00 (C) average or better and receive approval of his application for admission by the Admissions Committee of the School of Pharmacy.

FRESHMAN YEAR**First Quarter**

CH 103 Fund. Chem. & Lab. . . . 5
 MH 160 Algebra & Trig. . . . 5
 EH 101 English Comp. . . . 3
 HY 101 World History . . . 3
 PE Basic ROTC* . . . 1
 PE Physical Education . . . 1

Second Quarter

CH 104 Fund. Chem. & Lab. . . . 5
 MH 161 An. Geom. & Cal. I . . . 5
 EH 102 English Comp. . . . 3
 HY 102 World History . . . 3
 PE Basic ROTC* . . . 1
 PE Physical Education . . . 1

Third Quarter

BI 101 Prins. Biol. & Lab. . . . 5
 CH 105 Fund. Chem. & Lab. . . . 5
 EH 103 English Comp. . . . 3
 HY 103 World History . . . 3
 PE Basic ROTC* . . . 1
 PE Physical Education . . . 1

SOPHOMORE YEAR

BI 102 Plant Biol. & Lab. . . . 5
 CH 204 An. Chem. & Lab. . . . 5
 Group Requisite I . . . 3
 Group Requisite I . . . 3
 Basic ROTC* . . . 1

BI 103 Animal Biol. & Lab. . . . 5
 CH 207 Organic Chemistry . . . 5
 PS 205 Intr. Physics . . . 5
 Group Requisite I . . . 3
 Basic ROTC* . . . 1

CH 208 Organic Chemistry . . . 5
 PS 206 Intr. Physics . . . 5
 Group Requisite I . . . 5
 Group Requisite I . . . 3
 Basic ROTC* . . . 1

Total — 109 quarter hours

GROUP REQUISITES

GROUP REQUISITE I. These three and five-hour electives may be interchanged; they should be chosen from the areas of art, business, theatre, economics, English, foreign language**, geography, history, mathematics, music, philosophy, political science, psychology, sociology, and speech. Recommended courses are EC 200, EC 202, ACF 211, ACF 212, MN 341, EH 141, EH 253-254-255 or EH 260-261-262, **FL (10 hours), HY 201, HY 202, MH 162, PA 210, PA 211, PA 212, PG 211, PG 212, PO 209, and SP 202. IE 204 is also recommended.

*Voluntary. Students not taking Basic ROTC will substitute electives from the social sciences, humanities, and fine arts.

**Ten hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

Curriculum in Pre-Veterinary Medicine (PV)

The pre-veterinary medicine curriculum at Auburn is open only to students who are bona fide residents of the State of Alabama under the Regional Plan of the Southern Regional Education Board. *Minimum* requirements for admission to the School of Veterinary Medicine are the *first seven quarters* as listed below (120 quarter hours).

FRESHMAN YEAR

First Quarter			Second Quarter			Third Quarter		
CH 103	Fund. Chem. & Lab.	5	CH 104	Fund. Chem. & Lab.	5	BI 101	Prins. Biol. & Lab.	5
MH 160	Algebra & Trig.	5	MH 161	An. Geom. & Cal. I	5	CH 105	Fund. Chem. & Lab.	5
EH 101	English Comp.	3	EH 102	English Comp.	3	EH 103	English Comp.	3
HY 101	World History	3	HY 102	World History	3	HY 103	World History	3
	Basic ROTC*	1		Basic ROTC*	1		Basic ROTC*	1
PE	Physical Education	1	PE	Physical Education	1	PE	Physical Education	1

SOPHOMORE YEAR

BI 103	Animal Biol. & Lab.	5	AH 204	Anim. Biochem.		PO 209	American Govt.	5
CH 207	Organic Chemistry	5		& Nut.	5		Group Requisite I	3-5
PS 205	Intr. Physics	5	CH 208	Organic Chemistry	5		Group Requisite I	3-5
	Basic ROTC*	1	PS 206	Intr. Physics	5		Basic ROTC*	1
				Basic ROTC*	1			

JUNIOR YEAR

ZY 300	Genetics	5	CH 204	An. Chem. I & Lab.	5	CH 316	Phys. Chem. & Lab.	5
	Group Requisite I**	5				FL III	Foreign Language**	5
AH 302	Feed and Feeding	3	FL II	Foreign Language**	5		Group Requisite II	5
EH 141	Medical Vocabulary	3	PS 210	Modern Physics	5		Group Requisite III	5
				Group Requisite III	5			

GROUP REQUISITES

GROUP REQUISITE I. These requisites must be earned in humanities and fine arts, and the social sciences to meet the Liberal Education requirements of the University.

GROUP REQUISITE II. AH 200, AS 361, CH 204, CH 205, CH 209, CH 316, EC 200, MN 341, MN 342, EH 253-254-255 or EH 260-261-262, EH 350, EH 357, EH 358, EH 390, **FL (15 hours), HY 201, HY 202, MH 163, MH 264, PA 202, PA 210, PA 211, PA 212, PH 301, PG 211, PG 212, PO 210 or PO 309 or PO 325, PS 210, SP 202, SY 201, SY 203, VM 200, ZY 404.

GROUP REQUISITE III. These requisites are to be chosen from courses offered by the following departments: AR, BY, TH, EC, EH, GY, HY, MU, PA, PG, PS, SP, SY, and ZY. EED 310 may also be taken.

*Voluntary. Students not taking Basic ROTC will substitute electives from the humanities, fine arts, and social sciences.

**A student in PV pursuing the B.S. degree will take the first course of the 15-hour requirement in a single foreign language in the first quarter of his junior year. Students who have satisfactorily completed two years of a foreign language in high school should begin with that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

DEGREE OPTIONS: Students in PV may obtain a Bachelor of Science degree by completing the first nine quarters of this curriculum *plus*: (1) successfully completing the freshman year of the School of Veterinary Medicine, or (2) forty hours of Group Requisite II and nine hours of Group Requisite III, or (3) completing the requirements for a major selected from those listed below. (See Special Requirements for Departmental Majors.) Options (2) and (3) must add up to a total of 201 quarter hours.

Majors in the Pre-Veterinary Medicine Curriculum

The student will be guided by the pre-veterinary medicine advisers regarding matters relating to preparation for admission to the School of Veterinary

Medicine. Should he declare a major, he will be advised by the department in which he majors.

PV — MAJOR UNDECLARED

VEC—ECONOMICS
VEH—ENGLISH
VGY—GEOGRAPHY
VJM—JOURNALISM
VFL—FOREIGN LANGUAGE
VHY—HISTORY

VMH—MATHEMATICS
VPO—POLITICAL SCIENCE
VPA—PHILOSOPHY
VSP—SPEECH
VSY—SOCIOLOGY

Applications for admission to the School of Veterinary Medicine must be submitted to the Dean of that school by February 15 preceding the admission date. A minimum grade point average of 1.25 is required for admission; D grades in required academic courses are not acceptable. All course requirements must be completed by the end of the spring quarter preceding the date of admission. (For further information, see School of Veterinary Medicine on page 172.)

Special Curricula

Curriculum in Chemistry (CH)

The curriculum in chemistry meets the standards of the accrediting committee of the American Chemical Society. It prepares and trains students desiring careers in both pure and applied chemistry.

Training is offered in the fundamentals of the science, together with advanced courses in chemistry and physics. Electives should be chosen for their cultural value, and must be approved by the department head.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 111	General Chemistry . . . 5	CH 112	General Chemistry . . . 5	CH 113	General Chemistry . . . 5
MH 161	An. Geom. & Cal. I . . 5	MH 162	An. Geom. & Cal. II . 5	MH 163	An. Geom. & Cal. III . . . 5
EH 101	English Comp. . . . 3	EH 102	English Comp. . . . 3	EH 103	English Comp. . . . 3
HY 101	World History 3	HY 102	World History 3	HY 103	World History 3
	Basic ROTC* 1		Basic ROTC* 1		Basic ROTC* 1

SOPHOMORE YEAR

CH 204	An. Chem. & Lab. . . 5	CH 205	An. Chem. & Lab. . . 5	CH 303	Organic Chemistry . . 5
MH 264	An. Geom. & Cal. IV . . 5	PS 221	Gen. Physics II . . . 4	PS 222	Gen. Physics III . . . 4
PS 220	Gen. Physics I 4	MH 265	Lin. Diff. Equations . 3	MH 266	Topics Lin. Algebra . 3
	Basic ROTC* 1		Elective 3		Elective 3
PE	Physical Education . . 1		Basic ROTC* 1		Basic ROTC* 1
		PE	Physical Education . . 1	PE	Physical Education . . 1

JUNIOR YEAR

CH 304	Organic Chemistry . . 5	CH 305	Organic Chemistry . . 5	CH 409	Physical Chemistry . . 5
CH 407	Physical Chemistry . . 5	CH 408	Physical Chemistry . . 5	FL III	German** 5
FL I	German** 5	FL II	German** 5	PS 305	Modern Physics . . . 5
	Elective*** 3		Elective 3		Elective 3

SENIOR YEAR

CH 404	Organic Anal. (Qual.) 5	CH 411	Inter. Inorg. Chem. . 5	CH 413	Anal. Chemistry . . . 5
CH 410	Inter. Inorg. Chem. . 5	CH 412	Chem. Thermo-dynamics 5		Elective 5
	Group Requisite . . 5		Elective 3-5		Elective 3-5
	Elective 3		Elective 3		Elective 3

Total — 205 quarter hours

GROUP REQUISITE. EC 200, PO 209, or SY 201.

APPROVED ELECTIVES

EH Literature****	3-3-3	PO 209 American Government	5
EH 350 Shakespeare's Greatest Plays	3	EC 200 General Economics	5
EH 365 Southern Literature	3	EC 206 Socio-Economic Foundations of	3
TH 313 Theatre Appreciation I	3	Contemporary America	3
MU 373 Appreciation of Music	3	GY 303 Geography of the Soviet Union	3
MU 374 Masterpieces of Music	3	SY 201 Introduction to Sociology	5
HY 201 History of U.S.	5	PG 211 Psychology I	3
HY 202 History of U.S.	5		

*Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

**Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

***A maximum of six hours of advanced ROTC may be substituted for electives in the junior or senior year. Students will be certified to the American Chemical Society as Certified Graduates when they have made up the electives for which advanced ROTC was substituted.

****EH 253-254-255 or EH 260-261-262.

Alternate Curriculum in Chemistry (CH) (Biochemistry Option)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 111 General Chemistry	5	CH 112 General Chemistry	5	CH 113 General Chemistry	5
MH 161 An. Geom. & Cal. I	5	MH 162 An. Geom. & Cal. II	5	MH 163 An. Geom. & Cal. III	5
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
Basic ROTC*	1	Basic ROTC*	1	Basic ROTC*	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

SOPHOMORE YEAR

CH 204 An. Chem. & Lab.	5	CH 205 An. Chem. & Lab.	5	BI 101 Prins. of Biol. & Lab.	5
MH 264 An. Geom. & Cal. IV	5	PS 221 Gen. Physics II	4	CH 303 Organic Chemistry	5
PS 220 Gen. Physics I	4	MH 265 Lin. Diff. Equations	3	PS 222 Gen. Physics III	4
Basic ROTC*	1	Elective	3	Basic ROTC*	1
		Basic ROTC*	1		

JUNIOR YEAR

BI 103 Animal Biol. & Lab.	5	CH 305 Organic Chemistry	5	CH 409 Physical Chemistry	5
CH 304 Organic Chemistry	5	CH 408 Physical Chemistry	5	VM 200 Gen. Microbiology	5
CH 407 Physical Chemistry	5	ZY 301 Compar. Anatomy	5	ZY 424 Animal Physiology	5
Elective	3	Elective	3	Elective	3

SENIOR YEAR

CH 418 Biochemistry	5	CH 419 Biochemistry	5	CH 420 Biochemistry	5
FL I German**	5	FL II German**	5	FL III German**	5
EH 390 Adv. Composition	5	Group Requisite	3-5	Elective	3-5
Elective	3	Elective	3	Elective	3

Total — 204 quarter hours

GROUP REQUISITE. EC 200, PO 209, or SY 201.

APPROVED ELECTIVES

EH Literature****	3-3-3	PO 209 American Government	5
EH 350 Shakespeare's Greatest Plays	3	EC 200 General Economics	5
EH 365 Southern Literature	3	EC 206 Socio-Economic Foundations of	3
TH 313 Theatre Appreciation I	3	Contemporary America	3
MU 373 Appreciation of Music	3	GY 303 Geography of the Soviet Union	3
MU 374 Masterpieces of Music	3	SY 201 Introduction to Sociology	5
HY 201 History of U.S.	5	PG 211 Psychology I	3
HY 202 History of U.S.	5		

*Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

**Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

***EH 253-254-255 or EH 260-261-262.

Curriculum in Geology (GL)

The science of geology utilizes many concepts of other basic sciences in order to provide a basis for systematic study of the planet Earth. Today, more than ever before, the average citizen is aware of the role of geology and the geologist in almost every aspect of everyday life.

The undergraduate special curriculum in geology prepares the student broadly in all aspects of geological processes and principles. This should enable him to make a more intelligent selection of a graduate program of study that will permit specialization in one or more of the many aspects of the science — economic geology, geophysics, geochemistry, petrology, paleontology, ground water geology, or environmental geology, as well as other special fields from astrogeology to oceanography. Employment for the geologist ranges from federal and state service through university or college and industrial programs to private consulting.

The following four-year program satisfies the requirements for graduation with a Bachelor of Science degree in geology. (See also geology major and minor under Special Requirements for Departmental Majors.)

FRESHMAN YEAR

First Quarter

GL 101	Intr. Geology I	5
MH 161	An. Geom. & Cal. I	5
EH 101	English Comp.	3
HY 101	World History	3
	Basic ROTC*	1
PE	Physical Education	1

Second Quarter

GL 102	Intr. Geology II	5
MH 162	An. Geom. & Cal. II	5
EH 102	English Comp.	3
HY 102	World History	3
	Basic ROTC*	1
PE	Physical Education	1

Third Quarter

MH 163	An. Geom. & Cal. III	5
EH 103	English Comp.	3
HY 103	World History	3
	Elective	3-5
	Basic ROTC*	1
PE	Physical Education	1

SOPHOMORE YEAR

CH	Chemistry**	5
MH 264	An. Geom. & Cal. IV	5
PO 209	American Gov't.	5
EH	Literature†	3
	Basic ROTC*	1

BI	Biology***	5
CH	Chemistry**	5
EH	Literature†	3
GL 201	Geol. Field Methods	2
	Basic ROTC*	1

BI	Biology***	5
CH	Chemistry**	5
PO 210	State Gov't.	5
EH	Literature†	3
	Basic ROTC*	1

JUNIOR YEAR

GL 301	Mineralogy I	5
GL 310	Hist., of Life	5
PS	Physics††	4-5
	Group Requisite	3-5

GL 302	Mineralogy II	5
GL 311	Paleozoology	5
PS	Physics††	4-5
	Elective	3-5

GL 312	Paleobotany	5
PS	Physics††	4-5
	Minor I	5
	Elective	3-5

SENIOR YEAR

GL 401	Sed.-Sed. Pet.	5
	Minor I	5
	Minor II	5

GL 402	Str.-Met. Pet.	5
	Minor I	5
	Minor II	5

GL 403	Ign. Gl. & Pet.	5
GL 411	Stratigraphy	5
	Minor II	5

Total — 202 quarter hours

GROUP REQUISITES AND MINORS

GROUP REQUISITES. A course in music, theatre, art, speech, or journalism.

MINORS. Two 15-hour minors (or one 30-hour double minor) should be selected from those listed under the General Curriculum with the advice and approval of the student's departmental adviser.

*Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

**Preferably CH 111-112-113, but another 15-hour sequence of general chemistry (including labs) may be substituted with approval of departmental adviser.

***Either the sequence BI 101-102 or BI 101-103 may be chosen to fulfill the biological science requirement.

†EH 253-254-255 or EH 260-261-262.

††The 12-hour sequence PS 220-221-222, but a 15-hour physics sequence may be substituted with approval of departmental adviser.

Curriculum in Laboratory Technology (LT)

This curriculum, leading to the degree of Bachelor of Science in Laboratory Technology, is designed for men and women who wish to prepare for clinical and other laboratory positions in such fields as public health and bacteriology. Most of the graduates in this curriculum enter the field of clinical medicine as medical technologists. They should plan to attain status as Registered Medical Technologists which is accomplished by interning for one year in an approved hospital and then passing the National Registry of Medical Technologists written examination.

The *Medical Technology option* leads to the Bachelor of Science degree in Medical Technology (conferred by Auburn University). Degree requirements include successful completion of nine quarters of the laboratory technology curriculum, one year's satisfactory internship in a hospital approved by the American Society of Clinical Pathologists and by the Head of the Chemistry Department of Auburn University, and successful completion of the examination by the National Registry of Medical Technologists. Through completion of this examination, the candidate attains the status of Registered Medical Technologist.

Further requirements include: (1) Auburn University students transferring into medical technology must complete in the laboratory technology curriculum one academic year (54 hours) preceding the year of internship. (2) Transfers from other institutions who choose the medical technology option must complete the second and third years of the laboratory technology curriculum at Auburn prior to internship.

First Quarter			FRESHMAN YEAR			Second Quarter			Third Quarter		
BI 101	Prins. of Biol. & Lab.	5	BI 103	Animal Biol. & Lab.	5	CH 112	Gen. Chem. & Lab.	5	CH 113	Gen. Chem. & Lab.	5
CH 111	Gen. Chem. & Lab.	5	EH 101	English Comp.	3	EH 102	English Comp.	3	MH 161	An. Geom. & Cal. I	5
MH 160	Algebra & Trig.	5	PE 110	Health Science	3	PE 110	Health Science	3	EH 102	English Comp.	3
LT 101	Orientation	1	PE	Physical Education	1	PE	Physical Education	1	HY 306	Contemp. Affairs	3
PE	Physical Education	1							PE	Physical Education	1
			SOPHOMORE YEAR								
CH 207	Organic Chemistry	5	CH 208	Organic Chemistry	5	CH 204	An. Chem. & Lab.	5	CH 204	An. Chem. & Lab.	5
PS 205	Intr. Physics	5	PS 206	Intr. Physics	5	VM 200	Gen. Microbiology	5	VM 200	Gen. Microbiology	5
EH 103	English Comp.	3	VM 220	Human Anatomy & Physiol.	5	VM 221	Human Anatomy & Physiol.	5	VM 221	Human Anatomy & Physiol.	5
	Elective	3	EH 141	Medical Vocabulary	3						
			JUNIOR YEAR								
CH 418	Biochemistry	5	CH 419	Biochemistry	5	CH 420	Biochemistry	5	CH 420	Biochemistry	5
LT 301	Hematology	5	LT 305	Serology	5	LT 401	Adv. Hematology	5	LT 401	Adv. Hematology	5
VM 204	Path. Microbiology	5	ZY 411	Gen. Parasitology	5	LT 422	Hosp. Lab. Practice	5	LT 422	Hosp. Lab. Practice	5
HY 101	World History	3	HY 102	World History	3	HY 103	World History	3	HY 103	World History	3
			SENIOR YEAR								
ZY 308	Micrology	5	PY 428	Public Health	5	LT 405	Adv. Serology	5	LT 405	Adv. Serology	5
EH 345	Bus. & Prof. Writing	5	SP 202	App. Oral Comm.	5	LT 422	Hosp. Lab. Practice	5	LT 422	Hosp. Lab. Practice	5
	Elective	5		Electives	10	ZY 409	Histology	5	ZY 409	Histology	5
LT 402	Seminar	3									

Total — 205 quarter hours

GROUP REQUISITE. EC 200, PO 209, or SY 201.

APPROVED ELECTIVES		
EH	Literature*	3-3-3
FL 121-122	Elem. French I, II**	5-5
FL 151-152	Elem. German I, II**	5-5
EH 350	Shakespeare's Greatest Plays	3
EH 365	Southern Literature	3
TH 313	Theatre Appreciation I	3
MU 373	Appreciation of Music	3
MU 374	Masterpieces of Music	3
HY 201	History of U.S.	5
HY 202	History of U.S.	5
PO 209	American Government	5
EC 200	General Economics	5
EC 206	Socio-Economic Foundations of Contemporary America	3
GY 303	Geography of the Soviet Union	3
SY 201	Introduction to Sociology	5
PG 211	Psychology I	3

*EH 253-254-255 or EH 260-261-262.

**Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

Curriculum in Law Enforcement (LE)

The curriculum in law enforcement is designed to prepare students who plan careers in the supervision and administration of law enforcement agencies. Completion of this curriculum leads to the degree of Bachelor of Science.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
GY 102	Prins. of Geography 5	Group Requisite I	5	Group Requisite I	5
	Group Requisite I 3-5	Group Requisite II	4-5	Group Requisite II	4-5
EH 101	English Comp. 3	EH 102	English Comp. 3	EH 103	English Comp. 3
HY 101	World History 3	HY 102	World History 3	HY 103	World History 3
	Basic ROTC* 1		Basic ROTC* 1		Basic ROTC* 1
PE	Physical Education 1	PE	Physical Education 1	PE	Physical Education 1

SOPHOMORE YEAR

ACF 211	Intr. Accounting 5	ACF 212	Intr. Accounting 5	PO 323	Municipal Gov't. 5
PO 209	American Gov't. 5	PO 210	State Gov't. 5	SY 201	Intr. Sociology 5
EH	Literature** 3		Group Requisite III 3-5		Group Requisite III 3-5
PG 211	Psychology I 3	EH	Literature** 3	EH	Literature** 3
	Basic ROTC* 1		Basic ROTC* 1		Basic ROTC* 1

JUNIOR YEAR

EC 200	Economics I 5	EC 202	Economics II 5	PG 330	Social Psychology 4
PO 325	Public Admin. 5	PO 360	Law Enforcement 5	PO 362	Law Enforcement 5
SY 204	Social Behavior 5	SY 308	Juvenile Delinq. 5	SY 302	Criminology 5
	Group Requisite IV 3-5		Elective 3-5		Elective 3-5

SENIOR YEAR

PO 401	Const. Law I 5	PO 402	Const. Law II 5	PO 415	Public Pers. Admin. 5
PO 460	Law Enforcement 5	PO 462	Law Enforcement 5	PO 464	Law Enforcement 5
SY 405	Urban Sociology 5		Elective 3-5		Elective 3-5
			Elective 3		Elective 3

Total — 201 quarter hours

GROUP REQUISITES

GROUP REQUISITE I. The student may select one course from: MH 100, MH 159, MH 160, MH 161, or one natural science course, and two courses from: PA 202, PA 210, PA 211, PA 212, PA 214, PA 216. Or he may complete Group Requisite I in two quarters and use the remaining quarter as an elective, by taking the sequence MH 159-161; or the sequence MH 160-161; or one natural science course and one mathematics course (MH 100, MH 159, MH 160, or MH 161).

GROUP REQUISITE II. A minimum of 10 hours in one science, including corresponding laboratories, from the following: BI 101-102, BI 101-103, BI 101-104, CH 101-102-104 or CH 103-104, GL 101-102, PS 205-206, or PS 220-221-222.

GROUP REQUISITE III. The student will choose from the following: CH 101-102-104 or CH 103-104 or CH 111-112-113 (including corresponding laboratories), HY 201, HY 202, MH 162, MH 163, MH 220, MH 221, PA 210, PG 212, GY 203, JM 221, SP 202, ***FL (15 hours in one language).

GROUP REQUISITE IV. A course in speech or journalism.

*Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

**EH 253-254-255 or EH 260-261-262.

***A student who has satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses.

Curriculum in Mathematics (MH)

This curriculum is designed to prepare students for graduate study and eventual careers as mathematicians. The General Curriculum should be used by students who prefer flexibility in the design of their program (see page 90).

FRESHMAN YEAR		
First Quarter	Second Quarter	Third Quarter
FL I Foreign Language* 5	FL II Foreign Language* 5	FL III Foreign Language* 5
MH 161 An. Geom. & Cal. I 5	MH 162 An. Geom. & Cal. II 5	MH 163 An. Geom. & Cal. III 5
EH 101 English Comp. 3	EH 102 English Comp. 3	EH 103 English Comp. 3
HY 101 World History 3	HY 102 World History 3	HY 103 World History 3
Basic ROTC** 1	Basic ROTC** 1	Basic ROTC** 1
SOPHOMORE YEAR		
MH 220 Intr. Analysis*** 5	MH 221 Intr. Analysis II*** 5	MH 222 Intr. Analysis*** 5
Natural Science† 4-5	Natural Science† 4-5	Natural Science† 4-5
EH Literature†† 3	EH Literature†† 3	EH Literature†† 3
Basic ROTC** 1	Basic ROTC** 1	Basic ROTC** 1
PE Physical Education 1	PE Physical Education 1	PE Physical Education 1
JUNIOR YEAR		
FL I Foreign Language* 5	FL II Foreign Language* 5	FL III Foreign Language* 5
MH 331 Intr. Mod. Alg. I 5	MH 332 Intr. Mod. Alg. II 5	MH 333 Intr. Mod. Alg. III 5
MH 428 Lin. Diff. Systems 3	Group Requisite 5	Group Requisite 5
Elective††† 3	Elective 3	Elective 3
SENIOR YEAR		
MH 443 Lin. Geom. or	MH Requisite 5	MH Requisite 5
MH 444 Comb. Geom. Pl. or	Elective 5	Elective 5
MH 447 Found. Geom. 5	Elective 5	Elective 5
Elective 5	Elective 3	
Elective 5		

Total — 196 quarter hours

GROUP REQUISITES

GROUP REQUISITES. These requisites must be chosen from one of the following areas of social science: economics, education, history, political science, psychology, or sociology.

*The foreign language requirement may be met by (1) passing 15 hours (5 courses) in each of two of the languages French, German, and Russian, or (2) passing 30 hours (6 courses) in one of these three languages. If a student chooses the latter option he may, for sake of continuity, interchange the sophomore natural science sequence and the junior foreign language sequence. Students who have satisfactorily completed two years of a foreign language sequence in high school and who wish to continue with that language should begin their university work at the intermediate level. In such cases college credit is not normally granted for elementary level courses.

**Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

***Transfer students who have had as much as 20 quarter hours of analytic geometry and calculus may take MH 420-421-422 in lieu of MH 220-221-222.

†The natural science requirement may be met by taking PS 220-221-222 or CH 111-112-113. If the 12-hour physics sequence is selected, an additional 3-hour elective will be needed to meet the 196-hour requirement.

††EH 253-254-255 or EH 260-261-262.

†††Appropriate electives to meet the interests of the student may be selected in consultation with his departmental adviser.

Curriculum in Physics (PS)

The significant role of physics in the development and advancement of modern science is seen in the continual demand for scientists with outstanding preparation in the field. Opportunities for a rewarding career in this field are found in industrial and governmental laboratories in both pure and applied research. In addition, the continued increase in college and university enrollments will provide excellent opportunities for persons in the field desiring a career in teaching and/or research at the college or university level in higher education.

The curriculum in physics provides a fundamental preparation for persons pursuing a career in the areas described above. It also provides an excellent foundation for persons seeking to pursue graduate work in physics.

An outstanding feature of the curriculum is the research participation during the senior year wherein an investigation of one or more basic experimental problems is undertaken in conjunction with the research group of a member of the senior staff of the department. Excellent laboratory and library facilities are available for use in support of the analytical and experimental problems which the student will encounter.

Inquisitive students with exceptional abilities in mathematics and physical science and special aptitudes for research will find the physics curriculum a challenging inducement to test their competence and to strive for high goals of attainment.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 103	Fund. Chem. & Lab. I _____ 5	CH 104	Fund. Chem. & Lab. II _____ 5	MH 163	An. Geom. & Cal. III _____ 5
MH 161	An. Geom. & Cal. I* _____ 5	MH 162	An. Geom. & Cal. II _____ 5	PS 220	Gen. Physics I _____ 4
EH 101	English Comp. _____ 3	EH 102	English Comp. _____ 3	EH 103	English Comp. _____ 3
PE	Physical Education _____ 1	HY 101	World History _____ 3	HY 102	World History _____ 3
			Basic ROTC** _____ 1		Basic ROTC** _____ 1
		PE	Physical Education _____ 1	PE	Physical Education _____ 1

SOPHOMORE YEAR

MH 264	An. Geom. & Cal. IV _____ 5	FL I	German*** _____ 5	FL II	German*** _____ 5
PS 221	Gen. Physics II _____ 4		Social Science Elect. _____ 5	PS 305	Intr. Mod. Physics _____ 5
HY 103	World History _____ 3	PS 222	Gen. Physics III _____ 4	MH 266	Topics Lin. Algebra _____ 3
PS 217	Astronomy _____ 3	MH 265	Lin. Diff. Equations _____ 3	PS 340	Inter. Mechanics _____ 3
	Basic ROTC** _____ 1		Basic ROTC** _____ 1		Basic ROTC** _____ 1

JUNIOR YEAR

FL III	German*** _____ 5	MH 406	Elem. Partial D.E. _____ 5	PS 303	Optics _____ 5
PS 300	Inter. Elec. & Mag. I _____ 4	PS 302	Electronics _____ 5		Group Requisites _____ 10
	Elective _____ 5	PS 301	Inter. Elec. & Mag. II _____ 4		Elective _____ 3
MH 401	Cal. Vector Funct. _____ 3		Elective _____ 3		

SENIOR YEAR

PS 401	Theor. Physics I _____ 5	PS 402	Theor. Physics II _____ 5	PS 404	Thermodynamics _____ 5
PS 415	Mod. Physics I _____ 5	PS 416	Mod. Physics II _____ 5		Physics Requisite† _____ 5
	Electives _____ 8	PS 406	Adv. Lab. I _____ 2	PS 407	Adv. Lab. II _____ 2
			Electives _____ 6		Electives _____ 6

Total — 207 quarter hours

GROUP REQUISITES

CH 204	Analytical Chemistry I & Lab.††	PS 403	Theoretical Physics III
CH 407	Physical Chemistry	PS 405	Nuclear Physics
CH 408	Physical Chemistry	PS 408	Advanced Laboratory III
GL 301	Mineralogy I	PS 409	Intr. to Reactor Physics I
GL 302	Mineralogy II	PS 410	Intr. to Reactor Physics II
GL 401	Sedimen.-Sed. Petrology	PS 412	Seminar in Modern Physics
GL 402	Stret. Geology Met. Petrology	PS 413	Intr. to X-ray Crystallography
GL 403	Igneous Geology & Petrology	PS 414	Electron Optics & Microscopy
MH 403	Engr. Math. II	PS 417	Intr. to Biophysics
MH 405	Matrix Theory Applications	PS 421	Modern Electronics
MH 407	Intr. to Celestial Mech.	PS 435	Intr. to Solid State
MH 460	Numerical Analysis I	PS 470	Health Physics
PS 304	Applied Spectroscopy		

*Students not prepared for MH 161 must take MH 160 without credit.

**Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

***Three quarter sequences in French or Russian may be substituted. Fifteen hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases for elementary level courses.

†Either PS 405 or PS 435 must be elected.

††Credit for CH 204 allowed only if CH 407 and CH 408 are completed.

Curriculum in Applied Physics (APS)

This curriculum, like that in physics, provides a solid foundation in physics. In addition, it emphasizes related technical fields to provide a broader base for persons who desire to enter industrial and governmental research laboratories following receipt of the undergraduate degree. Persons wishing to pursue graduate work will find this curriculum also provides adequate preparation for advanced study.

During the junior and senior years, 20 hours of specialized courses are designated as Group Requisite I. These are to be chosen from one of the following areas: chemistry, geology, or aerospace, electrical, or mechanical engineering. Students anticipating graduate work should complete at least 15 hours in a foreign language: French, German, or Russian.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 103	Fund. Chem. & Lab.* _____ 5	CH 104	Fund. Chem. & Lab. _____ 5	MH 163	An. Geom. & Cal. III _____ 5
MH 161	An. Geom. & Cal. I** _____ 5	MH 162	An. Geom. & Cal. II _____ 5	PS 220	Gen. Physics I _____ 4
EH 101	English Comp. _____ 3	EH 102	English Comp. _____ 3	EH 103	English Comp. _____ 3
PE	Basic ROTC*** _____ 1	HY 101	World History _____ 3	HY 102	World History _____ 3
PE	Physical Education _____ 1	PE	Basic ROTC*** _____ 1	PE	Basic ROTC*** _____ 1
		PE	Physical Education _____ 1	PE	Physical Education _____ 1

SOPHOMORE YEAR

MH 264	An. Geom. & Cal. IV _____ 5	ME 321	Dyn. of a Particle _____ 4	GL 301	Mineralogy I _____ 5
ME 205	Appl. Mech.-Statics _____ 4	PS 222	Gen. Physics III _____ 4	PS 305	Intr. Mod. Physics _____ 5
PS 221	Gen. Physics II _____ 4	MH 265	Lin. Diff. Equations _____ 3	Group Requisite I _____ 5	
HY 103	World History _____ 3	MH 266	Topics Lin. Algebra _____ 3	EG 102	Eng. Drawing _____ 2
IL 103	Tool Lab. _____ 1	Group Requisite II _____ 3		Basic ROTC*** _____ 1	
	Basic ROTC*** _____ 1	Basic ROTC*** _____ 1			

JUNIOR YEAR

Group Requisite I	5	MH 406	Elem. Partial D.E.	5	PS 303	Optics	5	
PS 300	Inter. Elec. & Mag. I	4	PS 502	Electronics	5	PS 421	Modern Electronics	5
MH 401	Cal. Vector Funct.	3	PS 301	Inter. Elec. &			Group Requisite I	5
PS 217	Astronomy	3		Mag. II	4		Group Requisite II	3
				Group Requisite II	3			

SENIOR YEAR

PS 401	Theor. Physics I _____ 5	PS 402	Theor. Physics II _____ 5	PS 404	Thermodynamics _____ 5
PS 415	Mod. Physics I _____ 5	PS 416	Mod. Physics II _____ 5	Physics Requisite _____ 5	
Group Requisite I _____ 5		Group Requisite II _____ 5		Group Requisite II _____ 6	
Group Requisite II _____ 3		PS 406	Adv. Lab. I _____ 2	PS 407	Adv. Lab. II _____ 2

Total — 207 quarter hours

GROUP REQUISITE I

AE 302	Airloads _____ 4	EE 324	Digital Systems _____ 3
AE 303	Theor. Aerodynamics I _____ 3	EE 361	Network Analysis _____ 5
AE 304	Theor. Aerodynamics II _____ 4	EE 362	Linear Systems _____ 5
AE 400	Viscous Aerodynamics _____ 4	EE 373	Electronics II _____ 5
AE 414	Equilibrium Gasdynamics _____ 3	EE 425	Computer Organization _____ 3
AE 415	Jet Propulsion _____ 5	EE 471	Communications _____ 5
AE 432	Astrodynamic I _____ 3	GL 302	Mineralogy II _____ 5
AE 433	Astrodynamic II _____ 3	GL 401	Sedimen. Sed. Petrology _____ 5
CH 204	Analytical Chem. I & Lab.†† _____ 5	GL 402	Struct. Geology-Met. Petrology _____ 5
CH 305	Organic Chemistry _____ 5	GL 403	Igneous Geology & Petrology _____ 5
CH 407	Physical Chemistry _____ 5	ME 208	Strength of Materials I _____ 3
CH 408	Physical Chemistry _____ 5	ME 322	Dynamics II _____ 4
CH 409	Physical Chemistry _____ 5	ME 335	Metallurgy _____ 4
CH 410	Inter. Inorganic Chemistry I _____ 5	ME 340	Fluid Mech. I _____ 3
CH 412	Chemical Thermodynamics _____ 5	ME 341	Fluid Mech. II _____ 4
EE 262	Circuits _____ 3	ME 421	Heat Transfer _____ 4
EE 322	Logic & Computing Systems _____ 3	ME 450	Special Problems _____ 5

GROUP REQUISITE II

A minimum total of 23 hours of requisite credit must be taken in the social sciences area and in the humanities and fine arts area with at least one course

in each of the two areas. Students anticipating pursuit of graduate study in physics should elect three quarters in a foreign language, preferably German, French, or Russian. Five of the remaining hours must then be taken in a social science.

*Students selecting chemistry for their specialization area (via Group Requisite I) will take CH 111 and CH 112 instead of CH 103 and CH 104, and CH 113 instead of ME 205, CH 303 instead of ME 321, and CH 304 instead of GL 301.

**Students not prepared for MH 161 must take MH 160 without credit.

***Voluntary. If not enrolled in ROTC, the student may reduce his load by one hour during each of these quarters, but he should note that the number of hours required for graduation will not be reduced.

†Either PS 405 or PS 435 must be elected.

††Credit for CH 204 allowed only if CH 407 and CH 408 are completed.

Curriculum in Materials Engineering (MTL)

A curriculum in materials engineering is administered by the Department of Mechanical Engineering in the School of Engineering. It is an interdisciplinary curriculum conducted cooperatively by academic departments of the School of Engineering and the School of Arts and Sciences through a faculty Materials Engineering Curriculum Committee. (See page 154.)

School of Business

O. D. TURNER, *Dean*

H. ELLSWORTH STEELE, *Assistant Dean*

THE SCHOOL OF BUSINESS offers curricula at the undergraduate level leading to the Bachelor of Science Degree. It also offers work at the graduate level leading to the degrees of Master of Business Administration (MBA), Master of Science (MS), and Master of Arts in College Teaching (MACT). The Graduate School Bulletin should be referred to for more detailed information about work at the graduate level.

Objectives

The fundamental objectives of the School of Business are two: (1) to prepare students for managerial leadership careers in business and industrial organizations, and (2) to prepare students for responsible citizenship and leadership roles in society.

Accomplishment of these basic objectives requires that students acquire a sound foundation of work in the basic arts and sciences — including work in mathematics, the humanities, social sciences, and the natural sciences. There is also required a concentration of work in various functional areas of business — accounting, economics, finance, production and personnel management, marketing, statistics, and business law. In order to assure a desirable balance between courses in the arts and sciences and those in business, all programs offered by the School are designed to require that students take approximately half the total number of hours required for graduation in subject matter areas other than business and economics.

A number of professional option programs are offered to allow each student the opportunity for a reasonable degree of concentration of study in an area of major interest in the junior and senior years.

Effective managerial leadership in modern organizations requires analytical, decision-making, and communications skills. The development of these skills is emphasized — to the extent possible — in all business courses.

Co-operative Education Program

A co-operative program is offered for business students to provide an opportunity for those who desire to integrate academic training with actual business experience. For further information about this program, interested students should write to the Director, Co-operative Education, 107 Ramsay Hall, Auburn University, Auburn, Ala. 36830. See Co-operative Education Program under Special Programs in section for prospective students.

Dual Objectives Program With the School of Education

Teacher Education: Admission to the Teacher Education Program of the School of Education is open to students registered in the School of Business to the same extent that it is open to students registered in the School of Education. Upon completion of all requirements in the School of Business and of the Teacher Education Program, the Dean of the School of Education will recommend to the State Department of Education that the appropriate professional certificate be issued. A dual objective program has been developed in Office Administration. (See Office Administration curriculum and suggested electives, page 117.)

Students who wish to engage in high school teaching should identify this objective as soon as possible in their four-year undergraduate work. Such students will be advised by two advisers, a professional education adviser in the School of Education and an academic adviser in the School of Business. The advisers will counsel in their respective areas. Flexibility in scheduling course requirements is to be permitted in the pursuit of the requirements for both the School of Business curriculum and Teacher Education training.

Curriculum

The basic curriculum offered by the School of Business is a four-year one leading to the degree of Bachelor of Science. This four-year curriculum includes three major segments: (1) Pre-Business Program, (2) the Core Curriculum, and (3) Professional Option Programs.

The Pre-Business Program consists of a two-year course of studies to be taken by all business students during the freshman and sophomore years.

The Core Curriculum consists of a group of courses, with a total credit of 50 hours, required of all business students. This group of courses is designed to provide a common body of knowledge in business and administration.

The Professional Option Programs are designed to allow students to concentrate their studies, to some degree, in a field of major interest during the junior and senior years. Each student must choose one of the Professional Option Programs to follow during his, or her, junior and senior years. There are eleven such programs: Accounting (AC), Finance (FI), Economics (EC), Geography (GY), Quantitative Methods (QM), Marketing (MK), Transportation (TN), General Business (GB), Industrial Management (INM), Personnel Management and Industrial Relations (PIR), and Office Administration (OA).

The Pre-Business Program

The six-quarter Pre-Business Program is designed to (1) provide the foundation in the arts and sciences which is so essential in education for leadership in modern business organizations, and (2) prepare students for admission to any one of the eleven Professional Option Programs — the latter being designed to be taken during the junior and senior years.

Each student must complete all the required courses in the Pre-Business Program before he, or she, can be formally admitted to one of the Professional

Option Programs. Students who enter the School of Business as members of the freshman class will register in the Pre-Business Program and remain in it until all requirements are completed. Students who enter the School of Business by transfer, and who have not completed all requirements of the Pre-Business Program, will register in it until all requirements are completed.

Business students must complete all courses submitted to meet the requirements of the Pre-Business Program with a minimum grade point average of 1.00 (C). A student who has not progressed from the Pre-Business Program to one of the Professional Option Programs after the completion of eight quarters of study may continue to register in the Pre-Business Program only by special permission of the Dean, School of Business.

Students who have not completed all requirements of the Pre-Business Program may enroll in courses required in the junior year of the Professional Option Program they intend to follow with special permission of the Head of the Department which administers that program — provided they have completed six quarters of study with a 1.00 (C) average on their Pre-Business course work and have successfully completed the prerequisites to the junior level course. However, completion of all requirements of the Pre-Business Program is prerequisite to any courses required in the senior year of any Professional Option Program.

The six-quarter Pre-Business Program is common to all the Professional Option Programs except those in Economics, Geography and Office Administration. Students who plan to enter one of these programs should consult with the Assistant to the Dean, Student Affairs, School of Business, prior to beginning the sophomore year.

Six-Quarter Pre-Business Program

FRESHMAN YEAR

First Quarter	Second Quarter	Third Quarter
*EH 101 Eng. Comp. _____ 3	EH 102 Eng. Comp. _____ 3	EH 103 Eng. Comp. _____ 3
*HY 101 World History _____ 3	HY 102 World History _____ 3	HY 103 World History _____ 3
MH 159 or 160 _____ 5	MH 161 An. Geom. & Cal. _____ 5	Math/Sci. Elective _____ 5
Science _____ 5	**Science _____ 5	*Elective _____ 5
****Basic ROTC _____ 1	****Basic ROTC _____ 1	****Basic ROTC _____ 1
PE Phys. Ed. _____ 1	PE Phys. Ed. _____ 1	PE Phys. Ed. _____ 1

SOPHOMORE YEAR

ACF 211 Intr. Acct. _____ 5	ACF 212 Intr. Acct. _____ 5	EC 274 Bus. & Econ. Stat. I _____ 5
IE 301 Elec. Data Prog. _____ 5	EC 200 Economics I _____ 5	EC 202 Economics II _____ 5
†MN 200 Typewriting I _____ 3	PG 211 Psychology _____ 3	SP 202 App. Oral Comm. _____ 3
‡Elective _____ 3	Elective _____ 3	****Basic ROTC _____ 1
****Basic ROTC _____ 1	****Basic ROTC _____ 1	

*Students planning to take MH 162, as required in the third quarter of the freshman year in the INM, PIR and QM curricula, must take MH 160.

**A science series of at least ten hours is required. Possible courses are: BI 101-102 and/or 103 or BI 101-104; CH 101-102-104 or CH 103-104; GL 101-102; PS 205-206.

***Electives may be from any area, subject to departmental requirements. During the four years of study a minimum of 83 hours must be taken in Business and Economics and a minimum of 83 hours taken in non-business subjects. The remaining 41 hours may be from any area. The non-business subjects must include a minimum of 20 quarter hours in (a) humanities and fine arts and (b) mathematics-natural science electives in addition to the Freshman requirements. At least one course must be taken in each category.

****Students not taking Basic ROTC add six hours of electives to their programs.

†Students who have high school credit in Typing are not eligible for MN 200. Students who can pass a proficiency test are not required to take MN 200.

‡Students in INM, PIR and QM curricula must take EC 244—Graphic Methods.

The Core Curriculum

The Core Curriculum is designed in such a manner that some courses are introductory to advanced courses, while others are more integrative in purpose. Half the total credit hours of the Core Curriculum are in courses included in the Pre-Business Program, and the remainder in the junior and senior years. Students should take these courses in the particular year in which they are prescribed.

Courses in the Core Curriculum

SOPHOMORE YEAR

	No. Hours	
EC 200-202	10	Economics I and II
ACF 211-212	10	Principles of Accounting I and II
EC 274	5	Business and Economic Statistics I
	<hr/> 25	

JUNIOR YEAR

ACF 361	5	Principles of Business Finance
MT 331	5	Principles of Marketing
MN 310	5	Principles of Management
MN 341	5	Business Law I
	<hr/> 20	

SENIOR YEAR

MN 480	5	Business Policies and Administration
	<hr/> 50	

Total Hours

Professional Option Programs

The School of Business has four departments: Accounting and Finance, Economics and Geography, Management, and Marketing and Transportation. Each of these departments administers two or more Professional Option Programs.

Professional Option Programs are designed to allow students to concentrate advanced work in a field of major interest during the junior and senior years.

By the time he, or she, completes the Pre-Business Program each student should choose one of the Professional Option Programs to follow. Those who wish to follow the Professional Option Programs in Economics, Geography, or Office Administration should make the choice by the beginning of the sophomore year.

The programs administered by each of the departments are listed below.

Administering Department

Programs

Accounting and Finance

Accounting (AC)

Finance (FI)

Economics and Geography

Economics (EC)

Geography (GY)

Quantitative Methods (QM)

Management

General Business (GB)

Industrial Management (INM)

Office Administration (OA)

Personnel Management

Industrial Relations (PIR)

Marketing and Transportation

Marketing (MK)

Transportation (TN)

Department of Accounting and Finance

Accounting (AC)

A sound knowledge of the fundamentals of accounting is essential to success in any economic endeavor. Accounting is indeed the language of business, and accounting procedures and records are the basic ingredients for sound management decision-making in both business and non-business organizations, including public and philanthropic bodies. Extensive financial reports are required by the Securities and Exchange Commission with the sale of stocks and bonds which form the capital structure of our economic society. They are the basis for determining income taxes due federal and state governments.

The Professional Option Program in Accounting provides broad training in the field of business and financial management. The student is required to take seven basic accounting courses above the sophomore principles courses, and may elect other courses to provide an emphasis in a particular field of managerial or public accounting.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

First Quarter		JUNIOR YEAR Second Quarter		Third Quarter	
ACF 310 Fin. Acct. & Control	5	ACF 311 Inter. Acct.	5	ACF 312 Inter. Acct.	5
ACF 361 Prin. of Bus. Finance	5	MN 341 Bus. Law I	5	ACF 314 Income Tax	5
MN 310 Prin. of Mgt.	5	MT 331 Prin. of Mkt.	5	EH 345 B. & P. Writing	5
Elective	3	Elective	3	Elective	3

SENIOR YEAR

ACF 416 Auditing	5	Acct. Elec.	5	Acct. Elec.	5
Dept. Elective	5	MN 480 Bus. Policy	5	Elective	5
Elective	5	Elective	5	Elective	5
Elective	3				

Total — 207 quarter hours

ACCOUNTING AND FINANCE DEPARTMENTAL ELECTIVES

(For Accounting majors as applicable)

Accounting

- ACF 410 — Cost Accounting (5).
- ACF 414 — Advanced Income Tax Acc. (5).
- ACF 417 — Advanced Accounting (5).
- ACF 418 — Accounting for Business Consolidations (5).
- ACF 419 — Governmental Accounting (5).

Finance

- ACF 320 — Risk and Insurance (5).
- ACF 321 — Property Insurance (5).
- ACF 322 — Life Insurance (5).
- ACF 323 — Real Estate (5).
- ACF 340 — Personal Finance (3).
- ACF 363 — Advanced Business Finance (5).
- ACF 367 — Money Markets & Financial Inst. (5).
- ACF 464 — Investments (5).
- ACF 466 — Securities Analysis (5).
- ACF 467 — Cases & Problems in Bus. Finance (5).

Three categories of electives are included in the curricula as follows: elective, accounting elective, and department elective. These should be chosen in consultation with the adviser.

Finance (FI)

In a modern capitalistic society, the influence and the responsibilities of financial executives have been expanding dramatically in recent years. Financial officers are involved in the most profound decisions affecting the strategy of business operations. They decide to expand, merge, contract, and change. They are concerned not only with the pricing of products, but with the initial decision to produce them. All aspects of business affairs ultimately reduce to dollar terms, and the financial officer's intimate and critical knowledge of the intricacies of financial operations place him in a very vital role in corporate management.

The Professional Option Program in Finance offers students an opportunity to specialize in personal and institutional finance. Courses in real estate and insurance are available.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter	Second Quarter	Third Quarter
ACF 310 Fin. Acct. & Control _____ 5	ACF 363 Adv. Bus. Fin. _____ 5	ACF 320 Risk & Ins. _____ 5
ACF 361 Prin. of Bus. Finance _____ 5	MT 331 Prin. of Mkt. _____ 5	EH 345 B. & P. Writ. _____ 5
ACF 367 Money Mkts. & Financial Inst. _____ 5	MN 310 Prin. of Mgt. _____ 5	MN 341 Bus. Law I _____ 5
Elective _____ 3	Elective _____ 3	Elective _____ 3

SENIOR YEAR

ACF 464 Investments _____ 5	ACF 467 Cases & Prob. in Bus. Fin. _____ 5	MN 480 Business Pol. _____ 5
Fin. Elective _____ 5	Dept. Elective _____ 5	Dept. Elective _____ 5
Elective _____ 5	Elective _____ 5	Elective _____ 5

Total — 207 quarter hours**ACCOUNTING AND FINANCE DEPARTMENTAL ELECTIVES**

(For Finance majors as applicable)

Accounting

ACF 311 — Intermediate Accounting I (5).
ACF 312 — Intermediate Accounting II (5).
ACF 314 — Income Tax Accounting (5).
ACF 410 — Cost Accounting (5).
ACF 414 — Advanced Income Tax Acc. (5).
ACF 416 — Auditing (5).
ACF 417 — Advanced Accounting (5).
ACF 418 — Accounting for Bus. Consolidations (5).
ACF 419 — Governmental Accounting (5).

Finance

ACF 321 — Property Insurance (5).
ACF 322 — Life Insurance (5).
ACF 323 — Real Estate (5).
ACF 340 — Personal Finance (3).

Four categories of electives are included in the curricula as follows: elective, accounting elective, finance elective, and departmental elective. These should be chosen in consultation with the adviser.

Department of Economics and Geography**Economics (EC)**

Businessmen, public officials and educators are developing a greater appreciation of the role which economists can play in making crucial decisions. For students who wish to prepare for active participation in the decision-making process, the economic concentration offered by the School of Business provides a valuable foundation. (See also Economics major in the School of Arts and Sciences.)

During their freshman and sophomore years, students in the Professional Option Program in Economics follow the regular pre-business program with two exceptions. In the third quarter of the freshman year, they take GY 203 and in the second quarter of the sophomore year they take PA 210. As juniors and seniors, they pursue the following curriculum:

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter	Second Quarter	Third Quarter
PO 209 Intr. Am. Gov. _____ 5	EC 360 Money & Bank. _____ 5	MN 341 Bus. Law I _____ 5
SY 201 Intr. to Socio. _____ 5	EC 350 Labor Econ. _____ 5	MT 331 Prin. of Mkt. _____ 5
EH 253 Survey Eng. _____ 3	EH 345 B. & P. Writing _____ 5	EC 456 Inter. Macro _____ 5
Literature _____ 3	Elective _____ 3	Economics _____ 5
Elective _____ 5		Elective _____ 3

SENIOR YEAR

EC 451 Inter. Micro Economics	5	EC 454 Hist. Ec. Thought	5	MN 480 Bus. Policy & Adm.	5
Dept. Elec.	5	Dept. Elec.	5	Dept. Elective	5
Elective	5	Elective	5	Elective	5
Elective	3				

Total — 207 quarter hours

ECONOMICS DEPARTMENTAL ELECTIVES

EC 444 — Labor Legislation		EC 462 — Monetary Theory and Policy	
EC 445 — Industrial Relations		EC 465 — Public Finance	
EC 446 — Business Cycles		EC 471 — International Economics	
EC 452 — Comparative Economic Systems		MT 472 — Economics of Trans.	
EC 453 — Ec. of Growth and Development		EC 474 — Advanced Statistics	
EC 457 — Economic History of Europe		EC 485 — Mathematical Economics	
EC 458 — Ec. History of the U.S.			

Geography (GY)

The Geography Professional Option Program prepares students to serve a vital role in various agencies of the federal, state and local governments, in private business and in teaching. Agencies which find training in geography of especial value include the Geological Survey, the Forestry Service, the State Department, the Census Bureau, and the National Park Service, as well as city and state boards of industrial planning. Geographers assist private businesses in plant location, marketing research, and resource location and development. Geography teachers are in demand at both the high school and college levels. (See also Geography major in the School of Arts and Sciences, page 101.)

Geography students follow the regular pre-business curriculum for the freshman year, except they take GY 102 — Principles of Geography — instead of an elective in the third quarter. During their sophomore, junior and senior years, Geography students take the courses shown below.

FRESHMAN YEAR

(See Pre-Business Program, page 109)

SOPHOMORE YEAR

First Quarter		Second Quarter		Third Quarter	
GY 203 Econ. Geography	5	EC 200 Economics I	5	EC 202 Economics II	5
ACF 211 Intr. Acct.	5	ACF 212 Intr. Acct.	5	IE 301 Elec. Data Pro.	5
MN 200 Typwrt. I	3	GY 201 Weather & Cli.	5	GY 301 Geo. Pol. W. Pow.	3
Elective	3	*Basic ROTC	1	SP 202 App. Oral Comm.	3
*Basic ROTC	1			*Basic ROTC	1

JUNIOR YEAR

GY 305 Geo. of No. America	5	MT 331 Prin. of Mkt.	5	GY 303 Geo. Soviet Union	3
EC 274 Bus. & Econ. Statistics	5	Regional Geo.**	5	Regional Geo.**	5
EH 345 B. & P. Writ.	5	Option Elec.	5	Option Elec.***	5
Elective	3	Elective	3	Elective	3

SENIOR YEAR

GY 407 World Res.	5	GY 404 Phys. Geo.	5	GY 405 Cultural Geo.	5
Option Elec.***	5	Option Elec.***	5	Elective	5
Elective	3	Elective	3	Elective	3
Elective	3	Elective	3	Elective	3

Total — 206 quarter hours

GEOGRAPHY DEPARTMENTAL ELECTIVES

*Students not taking Basic ROTC may select equivalent hours in electives.

**Available Regional geography courses include GY 304, Geography of South America; GY 306, Geography of Europe; GY 307, Geography of Asia; and GY 308, Geography of Africa.

***Option electives are selected with consent of the adviser primarily from the following suggested list:

Business Option: MN 310, EC 360, MN 341, ACF 361, EC 402, MT 435, and EC 471.

Economics: EC 462, EC 453, EC 457, EC 458, EC 460, and EC 471.

Planning: ACF 323, GY 420, MT 472, and other courses pertinent to urban or regional planning.

During their junior and senior years, students follow, with the guidance of their advisers, a specialized program in Geography with options in business, economics, and planning.

Quantitative Methods (QM)

American society is placing increasing reliance upon quantitative methods in solving many of the problems which confront it. To enable students to participate actively in these new developments, especially in the area of management, the Professional Option Program in Quantitative Methods has been developed.

Students pursuing the Quantitative Methods Program follow the Pre-Business Program with the following exceptions: in the freshman year they take MH 160, Algebra and Trigonometry; MH 161, Analytical Geometry and Calculus; and MH 162, Calculus II. As first and second quarter sophomores, they take EC 244, Graphic Methods and IE 204, Computer Programming. As juniors and seniors, they take the courses shown below.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter	Second Quarter	Third Quarter
EC 474 Adv. Statis. _____ 5	MT 331 Prin. of Mkt. _____ 5	ACF 361 Prin. of Fin. _____ 5
EH 345 B. & P. Writ. _____ 5	EC 374 Quality Assur. _____ 5	MN 341 Bus. Law I _____ 5
Dept. Elective _____ 5	Dept. Elective _____ 5	AS 460 Econometrics _____ 5
Elective _____ 3	Dept. Elective _____ 5	Elective _____ 3

SENIOR YEAR

EC 475 Quant. Meth. of Management _____ 5	MH 267 Intr. Prob. & Stat. _____ 5	MN 480 Bus. Policies _____ 5
MT 436 Marketing Res. Methods _____ 5	Dept. Elective _____ 5	Elective _____ 5
Elective _____ 5	Elective _____ 5	Elective _____ 5
Elective _____ 3		

Total — 207 quarter hours

Students in this curriculum may select departmental electives from any 300 or 400 level course in the School of Business and general electives from any department within the University.

Department of Management

General Business (GB)

The General Business Professional Option Program is for students who desire a broad, general business education. It requires a minimum of business courses. The student has a wider choice of elective courses offered by other departments than in any other program offered by the School of Business.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter	Second Quarter	Third Quarter
ACF 310 Finance Acc. & Con. _____ 5	MN 341 Bus. Law _____ 5	ACF 361 Prin. of Fin. _____ 5
MT 331 Prin. of Mkt. _____ 5	MN 310 Prin. of Mgt. _____ 5	MN 342 Bus. Law II or _____ 5
EH 345 B. & P. Writ. _____ 5	EC 350 Labor Econ. or _____ 5	MN 445 Gov. & Bus. _____ 5
EH 253 Eng. Lit. I _____ 3	EC 445 Indus. Rel. _____ 5	EH 255 Eng. Lit. III _____ 3
	EC 254 Eng. Lit. II _____ 3	Elective _____ 5

SENIOR YEAR

MN 442 Pers. Mgt. or _____ 5	EC 446 Bus. Cycles or _____ 5	MN 480 Bus. Policies _____ 5
MN 380 Indus. Mgt. _____ 5	EC 465 Public Finance _____ 5	Dept. Elective _____ 5
EC 452 Comp. Ec. Sys. _____ 5	GY 404, 405, or 407 _____ 5	Elective _____ 5
Elective _____ 5	Elective _____ 5	
	Elective _____ 3	

Total — 207 quarter hours

A 10-hour series in Foreign Language or Philosophy may be substituted for the English requirement in the junior year.

Electives in the junior, senior year may be selected from the 300, 400 course offerings of departments outside the School of Business.

The Department Elective must be selected from the 300, 400 course offerings of the School of Business except geography and office administration.

Industrial Management (INM)

The Professional Option Program in Industrial Management is designed for students who wish to prepare themselves for managerial positions in industrial organizations.

It requires study in work standards, production control, computer applications, quantitative methods, human relations, management, and the utilization of these studies in management decision-making. Also, the student is permitted some free electives which he may use to study areas outside the School of Business.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter

MN 310 Prin. of Mgt.	5
IE 310 Motion & Time Sys.	5
MN 341 Bus. Law I	5
EC 374 Quality Assur.	3

Second Quarter

ACF 310 Finance Acc. & Con.	5
EH 345 B. & P. Writ.	5
MN 442 Personnel Mgt.	5
IE 302 Prod. Mgt. Fund.	3

Third Quarter

ACF 361 Prin. of Fin.	5
MT 331 Prin. of Mkt.	5
MN 380 Indus. Mgt.	5
Elective	3

SENIOR YEAR

EC 475 Quant. Meth. of Management	5
IE 316 Appli. of Data Proc. Systems	4
MN 447 Job Evaluation	3
Elective	3

EC 474 Statistics II	5
Dept. Elective	5
Elective	5
MN 448 Incent. Meth.	3

MN 480 Bus. Policy	5
Dept. Elective	5
Elective	5

Total — 207 quarter hours

Electives may be taken from 300 or 400 courses in the School of Business or other departments in the University upon approval of student's adviser. Department Electives must be selected from the 300, 400 course offerings of the Department of Management.

Personnel Management and Industrial Relations (PIR)

The Personnel Management and Industrial Relations Program is designed to prepare students for managing the personnel and industrial relations activities of various kinds of organizations. It blends studies in the areas of psychology, sociology, labor, industrial relations, and personnel management activities into decision making pattern for the organization's dealings with individual employees and unions. In addition, the program provides some free electives that the student may use to pursue studies of personal interest.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter

MN 331 Marketing	5
MN 310 Prin. of Mgt.	5
EC 350 Labor Econ.	5
PG 462 Train. & Superv.	3

Second Quarter

MN 442 Personnel Mgt.	5
SY 201 Sociology	5
EH 345 B. & P. Writ.	5
PG 463 Interviewing	3

Third Quarter

ACF 361 Prin. of Fin.	5
MN 361 Bus. Law I	5
SY 204 Soc. Behavior	5
MN 447 Job Evaluation	3

SENIOR YEAR

EC 445 Indus. Rel.	5
PG 461 Indus. Psy.	5
EC 474 Statistics II	5

MN 449 Adv. Pers. Mgt.	5
SY 408 Indus. Socio.	5
Dept. Elective	5
Elective	3

MN 480 Bus. Policy	5
Dept. Elective	5
Elective	5

Total — 207 quarter hours

Electives may be taken from the 300, 400 level courses in the School of Business or other departments in the University upon approval of the student's adviser. Department Electives must be selected from the 300, 400 course offerings of the Department of Management.

Office Administration (OA)

The Office Administration Program is designed to prepare students to become administration assistants, administrative secretaries, office managers or for other important positions in business, government, or professional offices.

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
MH 159 or 160 Math	5	MH 161 An. Geom. & Cal.	5	Elective	5
Science	5	Science	5	MN 200 Type I or	3
PE Physical Education	1	PE Physical Education	1	MN 201 Type II*	3
				PE Physical Education	1

SOPHOMORE YEAR

EC 200 Economics I	5	ACF 211 Intr. Acct.	5	ACF 212 Intr. Acct.	5
MN 210 Shorthand I	5	MN 211 Shorthand II	5	MN 212 Shorthand III	5
MN 201 Type II or	3	MN 202 Type III or	3	SY 201 Intr. to Soc.	5
MN 202 Type III	3	MN 203 Type IV	2	Elective	3
SP 202 App. Oral Comm.	3	EC 202 Economics II	5		

JUNIOR YEAR

MN 300 Transcription I	5	MN 301 Trans. II	5	MN 400 Office Mach.	5
EC 274 Statistics	5	MT 331 Marketing	5	MN 341 Bus. Law	5
Elective	5	EH 345 B. & P. Writ.	5	ACF 361 Pr. Bus. Fin.	5
Elective	3	Elective	3	MN 305 Records Mgt.	5

SENIOR YEAR

MN 403 Sec. Pro. I	5	MN 404 Sec. Pr. II	5	MN 402 Office Appren.	5
IE 501 Elec. Data Proc.	5	Elective	5	MN 405 Adm. Mgt. or	5
Elective	5	Elective	5	MN 310 Prin. of Mgt.	5
Elective	3	Elective	3	Elective	5

*Students with no previous typing experience should take Typewriting I, II, and III. Students with one year in high school, take II, III, and IV. Students with two years in high school should consult with OA staff.

A total of 205 or 206 quarter hours is required for graduation.

The nonbusiness subjects must include a minimum of 20 quarter hours in (a) humanities and (b) mathematics-natural science electives in addition to the uniformly required courses of the University in the freshman year. At least one course must be taken in each category.

Dual Objectives Program

Students may complement the Office Administration program by choosing suggested electives to prepare to teach. A Dual Objectives Program has been developed to meet the requirements in both the School of Business and the School of Education. By fulfilling the requirements of this program, the student earns a B.S. degree and qualifies to teach business subjects in secondary schools. The student who elects this program should make his wishes known as soon as possible to the Dean of the School of Business and the Dean of the School of Education in order to facilitate program planning and to minimize the possibility of undue delays. (See statement of Dual Objectives Program and consult Dean's office for details.)

Department of Marketing and Transportation

Marketing (MK)

Marketing and Transportation are primarily concerned with getting the right goods, to the right place, at the right price, and at the time they are needed. These right goods include people and services. Due to large scale production, regional specialization of production, and the tremendous number of new products entering the market each year, the marketing and transportation machinery has become extremely complex. Therefore, there is an increasing demand for college graduates to fill managerial positions in these areas.

The professional marketing option is designed to prepare students for positions in sales, advertising, marketing research, and marketing management.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter		Second Quarter		Third Quarter	
EH 345 B. & P. Writ.	5	MT 331 Prin. of Mkt.	5	MT 435 Marketing Prob.	5
MN 310 Prin. of Mgt.	5	ACF 361 Prin. of Fin.	5	MN 341 Bus. Law	5
SY 201 Sociology	5	ACF 310 Fin. Acct. & Control	5	Elective	5
Elective	3	Elective	3	Elective	3

SENIOR YEAR

MT 436 Mkt. Research	5	Department Elective	5	Department Elective*	5
MT 437 Sales Mgt.	5	MN 480 Bus. Pol.	5	Department Elective*	5
Elective	5	Elective	5	Elective	5
Elective	3				

Total — 207 quarter hours

*Electives for the Marketing and Transportation Options may be selected from the 300, 400 level courses in the School of Business or other departments of the University upon approval of the student's adviser. Departmental electives may be selected from the 300, 400 level course offerings of the Department of Marketing and Transportation.

Transportation (TN)

The Professional Transportation Option Program is recommended for students who desire to prepare for positions with air, bus, pipeline, railroad, steamship, or trucking industries, as well as logistics and physical distribution activities of business firms.

FRESHMAN AND SOPHOMORE YEARS

(See Pre-Business Program, page 109)

JUNIOR YEAR

First Quarter		Second Quarter		Third Quarter	
EH 345 B. & P. Writ.	5	MT 331 Prin. of Mkt.	5	MT 435 Marketing Prob.	5
MN 310 Prin. of Mgt.	5	ACF 361 Prin. of Fin.	5	MN 341 Bus. Law	5
SY 201 Sociology	5	ACF 310 Fin. Acct. & Control	5	MT 472 Econ. of Trans.	5
Elective	3	Elective	3	Elective	5

SENIOR YEAR

MT 436 Mkt. Res.	5	MT 476 Motor Trans.	5	Department Elective*	5
MT 473 Traffic Mgt.	5	MN 480 Bus. Pol.	5	Elective	5
Elective	5	Elective	5	Elective	5
Elective	3				

Total — 207 quarter hours

*Electives for the Marketing and Transportation Options may be selected from the 300, 400 level courses in the School of Business or other departments of the University upon approval of the student's adviser. Departmental electives may be selected from the 300, 400 level course offerings of the Department of Marketing and Transportation.

MARKETING AND TRANSPORTATION DEPARTMENTAL ELECTIVES

MT 332 Credits and Collections (5).	MT 436 Marketing Research Methods (5).
MT 333 Salesmanship (3).	MT 437 Sales Management (5).
MT 432 Advertising (3).	MT 438 Retail Merchandising (5).
MT 433 Retail Store Management (5).	MT 472 Economics of Transportation (5).
MT 434 Purchasing (5).	MT 473 Traffic Management (5).
MT 435 Marketing Problems (5).	MT 476 Motor Transportation (5).

School of Education

TRUMAN M. PIERCE, *Dean*

ROBERT L. SAUNDERS, *Associate Dean*

THE SCHOOL OF EDUCATION is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary teachers and school service personnel with the doctor's degree as the highest degree approved.

Professional preparation programs are provided for service in the fields of curriculum and teaching; administration and supervision; counselor education; and educational media. Since school service is a profession with various areas of activity, the School of Education provides training in specialized curricula on both the undergraduate and graduate levels. Undergraduate programs lead to the degree of Bachelor of Science in Education. Programs administered by the Graduate School lead to the degrees of Master of Education, the Master of Science, Specialist in Education, and Doctor of Education.

Programs and Degrees

Undergraduate

The Department of Elementary Education prepares teachers in the following programs of study: Early Childhood Education (in cooperation with The Department of Family and Child Development), Elementary Education, and Special Education (Mental Retardation.) These curricula lead to the degree of Bachelor of Science in Education and include study in the liberal arts, psychology, educational theory and practice, laboratory experiences, and provision for concentrations of study in speech correction, or a subject-matter field.

The Department of Foundations of Education provides a service function within the School of Education. Courses which relate to the total educational enterprise and which are ordinarily included in the program of study of all students in teacher education are offered through this department. Courses in human development, educational psychology, philosophy, sociology and history of education, and research and experimentation are offered.

The Department of Health, Physical Education, and Recreation prepares teachers of health and physical education for grades one through twelve. This curriculum leads to the degree of Bachelor of Science in Education and includes study in the liberal arts, psychology, educational theory and practice, laboratory experiences, and specialization in health, physical education and recreation.

The Department of Secondary Education prepares teachers for secondary schools. This curriculum leads to the degree of Bachelor of Science in Education and includes study in the liberal arts, specialization in a major and minor teaching field, psychology, educational theory and practice, and laboratory ex-

periences. Specialization in teaching fields include Art, Business Education, Theatre, English, Foreign Languages, Home Economics, Mathematics, Music, Science, Social Science, Speech, and Speech Correction.

The Department of Vocational and Adult Education prepares professional personnel in one of the following fields of specialization in vocational and technical education: adult education, agricultural education, basic vocational education, distributive education, industrial arts education, rehabilitation services education, and trade and industrial education. These programs lead to the degree of Bachelor of Science in Education. Curricula include study in liberal arts, psychology, educational theory and practice, laboratory experiences, and in one of the above fields of specialization. All curricula require a common core in professional and vocational education.

Interdepartmental Education provides courses in curriculum and teaching, educational media, and special education (mental retardation). Courses in education media lead to school librarian and audio-visual certification.

Dual Objectives Program

Students who are enrolled in Schools other than the School of Education who wish to complete requirements for graduation in an academic department and also to complete requirements of the Teacher Education Program may pursue the dual objectives program.

A student electing to pursue the dual objectives program will have an adviser in the academic department in which he is enrolled and an adviser in the School of Education. Advising the student concerning the curriculum of the academic department, including the major, minor and other requirements, will be the responsibility of the adviser in that department. The responsibility for advising the student on matters concerning the Teacher Education Program will be that of the adviser in the School of Education. The quarterly course schedule of the student will be approved by both advisers. Information describing the dual objectives program is available in the Student Personnel Office of the School of Education in Haley Center and in the Office of the Dean of the School in which the student is enrolled.

Applications and specific information about the criteria for selection and admission to Teacher Education are available in the Student Personnel Office in Haley Center, 3484.

Graduate

Graduate programs are offered through the Graduate School in administration and supervision; counselor education; educational media; elementary education; health education; physical education; secondary education; and vocational and adult education.

Fifth-year programs of study in these areas lead to the degrees of Master of Science and Master of Education.

Sixth-year programs in curriculum and teaching; administration and supervision; counselor education; and educational media lead to the degree of Specialist in Education.

A program leading to the degree of Doctor of Education is offered with areas of specialization in Counselor Education, Educational Administration and Supervision, Elementary Education, and Secondary Education. Specializations in Secondary Education include the following sub-specializations: (a) Business Education, (b) Language Arts Education, (c) Mathematics Education, (d) Science Education, and (e) Social Science Education. See Graduate School Bulletin.

Programs leading to the degrees of Master of Education, Master of Science in Education, Specialist in Education, and Doctor of Education are offered for junior college administrators, student personnel administrators, and teachers. These programs meet requirements of the Southern Association of Colleges and Schools, the Graduate School and the School of Education. Sufficient flexibility exists to permit students to adapt programs to their individual needs. Course guides for each of the various programs are available in the Office of the Dean of Education.

Related Programs and Services

Teacher Certification Services

Programs in the School of Education are approved by the National Council for Accreditation of Teacher Education and the Alabama State Board of Education for certifying superintendents, supervisors, principals, counselors, elementary and secondary teachers, and educational media specialists. Upon satisfactory completion of a prescribed course of study and upon recommendation of the Dean of the School of Education a professional certificate will be issued by the appropriate State Department of Education. Twenty-eight State Departments of Education now have reciprocal agreements for issuing certificates to graduates of institutions accredited by NCATE.

Students who are enrolled in schools other than the School of Education who wish to complete requirements for graduation in an academic department and also to complete requirements of the Teacher Education Program may pursue the dual objectives program. See page 120. Students may also take courses in education and psychology for acquiring knowledge and understanding of human growth and development, and teaching as a profession. They are eligible to take all such courses for which they satisfy prerequisites.

For detailed requirements for the Professional Certificate (Ranks B, A, or AA), Emergency Professional, and Trades and Industries Certificates, consult the Alabama State Department of Education Bulletin 1966, No. 14, available in the office of the Dean of the School of Education.

Student Personnel Services

VIRADA K. SCHUESSLER, Coordinator

The Student Personnel Services Program of the School of Education assists the student in understanding the University and becoming a part of it, in identifying his strengths and limitations, in determining his professional goals, in selecting the proper curriculum in the University, and in securing employment upon graduation.

Recruitment. — Able young people are encouraged to consider teaching as a profession. Efforts of organizations such as the Future Teachers of America in the secondary schools and the Student National Education Association in colleges and of individuals and groups in the profession are aimed at seeking out, informing, and encouraging students.

Financial Aid. — Opportunities for financial aid are available in part-time employment and loans. One type of loan, the Student Loan Program financed by the National Defense Education Act, provides low-interest, long-term loan funds that are particularly attractive to School of Education students because of special provision for the prospective public school teacher. The NDEA provides that if a student goes into teaching in a public elementary or secondary school, up to 50 per cent of the principal (plus interest) of the loan may be cancelled.

Information and applications for NDEA loans, other financial aid, and employment may be obtained from the Office of Student Financial Aid.

Orientation. — The Orientation Program provides University personnel with an understanding of the student's background, individuality, and needs. It assists the student in obtaining information about the University and its programs, in learning more about himself, and in selecting professional goals that are compatible with his abilities. All freshmen, transfer students and students pursuing the dual objectives program participate in an orientation program for one quarter.

Counseling. — Each Education student is assigned to a faculty adviser who assists the student whenever possible. Other sources of assistance include personnel in the Office of the Dean, classroom teachers, personnel in the Student Counseling Service, the offices of the Dean of Women, the Dean of Student Affairs, the Registrar, dormitory head residents and counselors, and ministers of local churches.

The Selective Admission and Retention Program in Teacher Education. — The Teacher Education Program is made up of three basic components: the pre-professional program; professional education, including the professional internship; and major and minor teaching fields.

The student will normally complete during his first two years the pre-professional program. Upon completion of 90 quarter hours of appropriate general education courses, the student should submit a written application to the Committee on Selective Admission and Retention to Teacher Education. Criteria for admission are: (1) evidence of adequate scholastic ability, (2) completion of general education requirements, (3) an over-all grade point average of 1.0 (C), (4) evidence of proficiency in English, (5) completion of the Pre-Teaching Field Experience Program, and (6) potential for teaching, evidence of emotional stability and absence of undesirable personal characteristics.

These criteria also apply to transfer students.

While retention in the Teacher Education Program is based on the continuous evaluation of the student, a formal evaluation takes place as a prerequisite for admission to the professional internship. At least one quarter prior to the internship the student must submit to the Selective Admission and Retention Committee a formal application for internship approved by his adviser. Requirements for admission to the professional internship are: (1) admission to the Teacher Education Program at least three quarters prior to the professional

internship, (2) completion of appropriate courses in area of specialization, (3) a grade point average of 1.25 in all courses completed in professional education and in the teaching major and minor, and (4) evidence of emotional stability and absence of undesirable personal characteristics.

In order to be eligible for graduation with teacher certification, a student will be expected to complete the requirements identified above and achieve a grade point average of 1.5 in his courses in education and in his teaching major and minor.

Persons with degrees other than in education may make application for study in a curriculum leading to professional certification. Programs of study are available for earning the Class B and A Certificates and the master's degree. Often, work experiences in the teaching profession and other professional fields permit alternative plans for fulfilling the requirements in a particular program of study. Academic background and work experience are evaluated for purpose of developing the most effective program possible for each student.

Applications and specific information about the criteria of selection for admission to teacher education are available from the Student Personnel Office in Haley Center.

Placement and Follow-Up. — The Teacher Placement Service provides, free of charge, assistance to prospective teachers in locating desirable positions and assistance to employers in identifying candidates. Persons interested in placement should contact the Student Personnel Office, Haley Center. Follow-up studies of successes, failures, and problems of graduates are made. Further information may be obtained from the Coordinator of Student Personnel Services in Haley Center.

Field Services

R. S. CLARK, *Coordinator*

Field Services constitute the phase of the work of the School of Education which is designed to make the programs and services of the School available to individuals and groups off campus. Field Services enable the School to combine its three major functions: instruction, research, and extension; and make them available to off-campus groups for continuous improvement of public education in the State and region. Major categories of services are available. These follow:

Off-Campus Instruction. — This instruction is available through the Field Laboratory Program, enabling teachers in service to complete a total of 16 quarter hours of residence credit toward a graduate degree. The program uses the local school setting as a laboratory in which graduate courses are provided as a framework for solving instructional problems related to various areas of study. The program may be used as a supplement to existing in-service programs or as a basis for developing such programs.

Short courses may also be offered on a non-credit basis for groups interested in specific areas of education and psychology. The courses may consist of a series of lectures or workshops and are available to groups of professional and non-professional personnel interested in short courses in some specific aspect of their work.

Educational Television. — Resources and materials of the School of Education are presented to Alabama citizens through the facilities of the Alabama Education Television Network. Telecasts direct and enrich teaching programs for elementary and secondary school students, and assist teachers in their professional career development programs.

Further information regarding Educational Television at Auburn University is contained elsewhere in this Bulletin. A schedule of courses and specific course study guides may be obtained by writing the Director, Educational Television, Auburn University.

Lecture and Consultative Service. — The staff of the School of Education is composed of persons who are skilled in general and specific areas of education. The Office of Field Services coordinates the services of these faculty members for lecture and consultative services. These services may be used with in-service education, school and community projects, teacher workshops and institutes, and community clubs and organizations.

School Surveys. — School systems desiring comprehensive school surveys or surveys in specific areas of education such as school plant utilization and construction, school finance, administrative organization, and curriculum and teaching programs, may secure services of this type from the School of Education. Surveys may be conducted as separate projects or in conjunction with the Field Laboratory Program described above.

Research Services. — School systems may wish to conduct research in such areas as the instructional program, administrative and supervisory patterns and organizations, school and community projects, the development and evaluation of testing programs, and the use of instructional materials and facilities. The assistance of the staff of the School of Education is available for these activities, either as separate endeavors or in conjunction with the instructional and survey services described above.

Correspondence Study. — Correspondence study provides undergraduate instruction for persons unable to attend college on a regular basis. Courses parallel to those given on campus are available in English, education, economics, health, physical education and recreation, history, mathematics, psychology, and sociology. Other courses may be added as the demand warrants. All the courses carry college credit. For information concerning the Correspondence Study Program of Auburn University, see page 43 of this Catalog.

Learning Resources Center

WILLIAM E. HUG, *Coordinator*
ASSOCIATE PROFESSORS DAWSON AND MILLER
ASSISTANT PROFESSOR MILES
ADMINISTRATIVE ASSISTANT JONES
INSTRUCTORS CAPPS, AND TODD

The Learning Resources Center is a laboratory and service agency to the School of Education. Extensive collections of films, filmstrips, transparencies, and printed references as well as learning machines are maintained. Learning Resources Personnel assist faculty and students in producing, selecting, and using learning materials.

In-Service Agricultural Education and Supervision

T. L. FAULKNER, *State Supervisor*

ASSISTANT SUPERVISORS DILWORTH, GREEN, HOLLEY, HALCOMB, LEWIS, SELLERS, AND WHITE

In cooperation with the State Department of Education, the School of Education maintains an in-service teacher education and supervisory division. This service extends to 345 departments of vocational agriculture in accredited high schools of the State and to more than 25 teachers of veterans.

Vocational Rehabilitation Service

F. W. JENKINS, *Assistant Area Supervisor*

ROBERTS, *District Supervisor*

LAMBERT, *Counselor*

The State Department of Education in cooperation with Auburn University maintains the local Rehabilitation Service which provides vocational guidance, counseling, training and placement services to handicapped citizens. The Rehabilitation Service also makes available to handicapped citizens such services as: surgical and/or medical care, hospitalization, therapeutic treatment and artificial appliances, when these services are essential to training and/or employment and the individual is not financially able to secure them.

Undergraduate Curricula for the Preparation of Teachers

The following statements set forth requirements and guides for the development of programs for students pursuing a teacher education curriculum. Requirements for the pre-professional program, the program of professional education, and the fields of teaching specialization are stated. Listed also are scholastic requirements, total credit requirements, recommended courses, and provisions for electives in the different preparation programs.

I. Scholastic Requirements

Students enrolled in the School of Education or those enrolled in other Schools who are pursuing the Dual Objectives Program must meet the following scholastic requirements: a grade point average of 1.0 (on a 3 point scale) for admission to Teacher Education and a grade point average of 1.25 in all courses completed in professional education and in the teaching major and minor for admission to the professional internship. A grade point average of 1.5 in courses in education and the teaching major and minor is expected for graduation with certification.

II. Pre-Professional Requirements

The pre-professional program as outlined here partially fulfills the liberal arts requirement for students preparing to enter a teacher preparation program

leading to professional certification as a teacher in elementary and/or secondary schools. A major portion of the pre-professional requirements will be completed prior to admission to the teacher education program.

English

EH 101-102-103 English Composition (3-3-3)	9
SP 202 Applied Oral Communication (3)	3
Literature (American, English or World)	9

Social Science

HY 101-102-103 World History (3-3-3)	9
SY 201 Introduction to Sociology (5)	5
Approved Social Science electives selected from Economics, Geography, History, Political Science and Sociology	10

Science

Biological

BI 101 Prin. of Biology (5)	5
BI 102 General Plant Biology (5)	
BI 103 General Animal Biology (5)	Select 1
BI 104 Biology in Human Affairs (5)	5

Physical

*CH 101-102-104 General Chemistry (3-3-5)	
or Ch 103-104	
PS 204 Funda. of Physics (5)	
GL 101-102 Intr. Geology (5)	
AA 304 Meteorology (5)	Select 2
AY 310 Earth Science (5)	10
SED 473 Gen. Science for Tchrs. (5)	
PHS 100-101 Physical Science (5-5)	
(For Elementary Majors Only)	

Mathematics

Approved Math Course (5)	5
--------------------------	---

Physical Education

PE 101-102-103 (1-1-1)	3
------------------------	---

Orientation

Freshman Orientation or Transfer Orientation (1)	1
Introduction to Laboratory Experiences (1)	1

Foundations of Education

FED 213 Human Development (5)	5
FED 214 Psychological Foundations of Education (5)	5

III. Professional Requirements

This phase of the Teacher Education Program develops competence in the content and skills of professional teacher education. It adds depth of understanding and gives social meanings to the knowledge acquired. Required professional studies are concerned with the growth and development of the individual, the nature of society, and the functions of education in society. Through the study of professional literature, observations, and laboratory experiences, the student acquires knowledge regarding the history and philosophy of education, the administration and organization of schools, curriculum development, teaching and learning processes, learning resources, and the evaluation of teaching effectiveness.

*CH 101-102-103L required of Home Economics Education majors.

A. Foundations of Education

The philosophical, social and psychological Foundations of Education provide background resources essential to effective participation in the teaching profession. The field emphasizes the concepts, principles, and theories essential for understanding and improving educational practices in light of historical developments and current social needs. Formal classwork includes an analysis of historical, philosophical, social, and psychological considerations upon which the educational enterprise is based.

Foundations of Education provides the resources and methods of formulating, evaluating, and revising educational policies, curriculum designs, schemes of school organization and support, and strategies for teaching and learning. All students in the teacher preparation program will complete FED 213, Human Growth and Development, five hours; FED 214, Psychological Foundations of Education, five hours; FED 320, Social Foundations of Education, 5 hours; and FED 480, Philosophical Foundations of Education, 5 hours. Evaluation of the aims and achievements of the educational enterprise as a whole is a concern of each of these Foundational studies. Also, required laboratory experiences, including the Pre-Teaching Field Experience and the Professional Internship, are evaluated in one or more of these Foundations courses.

B. Teaching and Program

This phase of the teacher preparation program is designed to assist the student in acquiring the knowledge, understanding, and skills deemed essential for success in the different specializations. Curriculum development, methodology, teaching and learning resources, and evaluation of teaching effectiveness are emphasized in the various areas of specialization. Each student in the teacher preparation program will complete the courses listed under the school program in which he is preparing to teach.

1. Elementary Education

A. Early Childhood Education	
EED 320 Curriculum for Early Childhood Education I	10
EED 420 Curriculum for Early Childhood Education II	10
EED 455 Analysis of Early Childhood Education Programs	3
B. Elementary Education	
EED 301 Elementary Curriculum I	10
EED 401 Elementary Curriculum II	10
EED 450 Analysis of Elementary Instructional Strategies	3
C. Special Education (Mental Retardation)	
EED 301 Elementary Curriculum I	10
EED 401 Elementary Curriculum II	10
IED 479 Methods and Materials for Teaching the Mentally Retarded	5

2. Secondary Education

*SED 405 Teaching in Secondary School, or	
IED 414 Teaching in Elementary and Secondary Schools (Major Fields)	3
*SED 410 Program in Secondary School, or	
IED 423 Program in Elementary and Secondary Schools (Major Field)	3
SED 405 Teaching in Secondary School, or	
SED 410 Program in Secondary School (Minor Field) or	
IED, HPR, or VED 414 Teaching in Elementary and Secondary School, or	
IED, HPR, or VED 423 Program in Elementary and Secondary Schools (Minor Field)	3

3. Vocational and Adult Education

VED 410 Occupational Information	3
VED 414 Program in Area of Specialization	3
VED 415 Teaching in Area of Specialization	3
VED 456 Learning Resources in Area of Specialization	3
VED 423 Program in Basic Vocational Education (Minor Field)	3

*Teaching and Program courses SED 407 and SED 412, are required in major for students in home economics education.

4. Health, Physical Education and Recreation

HPR 414 Teaching in Elementary and Secondary School, and	
HPR 423 Program in Elementary and Secondary Schools (Major Field)	6
SED 405 Teaching in Secondary Schools, or	
SED 410 Program in Secondary School (Minor Field)	3
or	
IED or VED 414 Teaching in Elementary and Secondary Schools, and	
IED or VED 423 Program in Elementary and Secondary Schools (Minor Field)	3

C. Laboratory Experiences

The Laboratory Experiences Program provides sequential learning opportunities in public school and community settings for all students throughout the teacher preparation program. Laboratory experiences are provided primarily through the following programs: (1) **Pre-teaching Field Experience Program**, (2) **Extended Laboratory Experiences** including a para-professional level program for secondary majors, (3) **Cooperative Education Program**, and (4) the **Professional Internship**.

The **Pre-teaching Field Experience Program** provides an initial base-line laboratory experience for all students in the teacher preparation program. It is initiated in the course, Introduction to Laboratory Experiences (EED, SED, VED 104 and HPR 108), with specific follow-up responsibilities assigned to the Foundations Department (FED 213, FED 214, and FED 320). Students are required to participate in the program a minimum of ten full days at the beginning of the public school term in the fall quarter of the year. This experience, a pre-requisite for admission to the Professional Teacher Education Program, involves the student in planning and evaluating learning experiences, counseling, participation in pre-school conferences and faculty study, school and community meetings, and involvement in actual teaching situations.

The **Extended Laboratory Experiences Program** provides meaningful laboratory experiences for students concurrently with their enrollment in professional education courses (EED 301 and FED 214; EED 401 and FED 320; SED 405 and 410; HPR 414 and 423; IED 414 and 423; VED 414 and 423). These courses are scheduled to provide the student an opportunity to gain work experiences in the Auburn, Opelika, or Lee County Schools.

The **Co-operative Education Program** provides laboratory experiences for certain students involved in the teacher preparation program on an alternating quarter arrangement with college attendance. (For description see page 44.)

The **Professional Internship**, the culminating professional laboratory experience for students, is a full time assignment in an off-campus school and community. Experiences include personal and professional contacts with various phases of community life and the application of concepts, skills and knowledge the student has acquired in classroom situations.

The student enrolls for 15 credit hours and devotes a full quarter to the internship. The program is divided into three phases: orientation, off-campus experience, and evaluation. Students must be admitted to the Teacher Education Program three quarters prior to the Professional Internship and must have completed appropriate courses in their areas of specialization.

The Internship for students with a major or minor in art; theatre; health, physical education and recreation; industrial arts; music; speech and speech correction, requires experience in both elementary and secondary schools. Students in either secondary or elementary education who complete a minor in educational media (school library science) are required to devote a part of their Internship to appropriate experiences in the school library.

Students who have had teaching experience or other related experiences may be permitted to satisfy the Internship through a special program which is offered for ten quarter hours credit during the Summer Quarter in lieu of the Professional Internship. Students will be considered on an individual basis for the special program.

When the Professional Internship is completed in more than one curriculum area, students may register for a total of 15 quarter hours in combinations of five and ten quarter hours. Professional Internship courses in the various departments are listed as follows:

- EED 425 Professional Internship in Elementary Schools
- IED 425 Professional Internship in Elementary and Secondary Schools
- HPR 425 Professional Internship in Health and Physical Education in Elementary and Secondary Schools
- SED 425 Professional Internship in Secondary Schools
- VED 425 Professional Internship in Vocational and Adult Education

Other laboratory experiences for students are provided within the framework of courses in the Teacher Education Program.

IV. Requirements for Major and Minor Fields of Specialization

Study in a major and/or minor field of specialization helps students develop the academic competencies needed for entering the teaching profession with qualifications for teaching in one or more areas of the school program.

A student preparing to teach only at the secondary school level is required to complete a major and a minor field of specialization.

A student enrolled in secondary education may prepare to teach in selected fields on a twelve-grade basis. These fields of specialization are art; theatre; health, physical education and recreation; industrial arts; music; speech, speech correction, and educational media (school library science).

Students interested in qualifying to teach in one area of the secondary school program, should study with care the respective fields for specialization with a view of selecting the most appropriate teaching field or fields.

Requirements listed below represent minimum hours for a major and a minor in the respective fields of specialization. The number of hours listed for each field of specialization is exclusive of courses completed in pre-professional and professional education. The requirements also exclude the use of any course as partial fulfillment for both the major and the minor field of study.

SUBJECT	MINOR	MAJOR
Adult Education	24	48
Agricultural Education		75
Art	40	60
Basic Vocational Education		
Basic Agriculture	28*	43
Basic Building Construction	28*	43
Basic Distributive Education	26*	44
Basic Metal Technology	29*	43
Basic Power Mechanics	29*	44
Business Education		
General Business		67
Office Administration		67
Composite Major-Minor-Business Management Management Services		80

*For Basic Vocational Education Majors only.

Distributive Education	27	57
Educational Media	28	
English	20	40
Health Education	31	52
Health, Physical Education and Recreation	40	55
Industrial Arts Education	27	50
Mathematics	35	55
Modern Languages	30	40
Music	36	96
Composite Major-Minor-Instrumental and Choral		
Choral and Elementary School Music		96
Science		
General Science		45
Biological Science	30	45
Physics	27	42
Chemistry	30	45
Social Science		
General Social Science		40
Economics	30	40
Geography	30	40
Sociology	30	40
History	30	40
Political Science	30	40
Psychology	28	
Rehabilitation Services Education		57
Speech	32	40-50
Speech Correction	33	41-51
Theatre	32	57
Trade and Industrial Education		60
Vocational Home Economics		68
Composite Major-Minor		86-88

Students pursuing a preparation program for teaching in the secondary school only or for teaching in specific fields in both elementary and secondary school programs will complete the subject-matter requirements as listed under the field or fields in which the student is preparing to teach.

ADULT EDUCATION

Minor: 24 Hours

VED 413 Nature of Adult Education	5
VED (f) 414 Program in Adult Education	3
VED 466 Teaching Out-Of-School Groups	3
VED 491 Problems in Teaching Dis-advantaged Adults	3
Approved Electives from 300-400	10

Major: 48 Hours

Minor Requirements	24
VED 410 Occupational Information	3
VED 415 (f) Teaching in Adult Education	3
VED 425 (f) Internship in Adult Education	15
VED 456 (f) Learning Resources in Adult Education	3

AGRICULTURAL EDUCATION

Major: 75 Hours

AS 301 Agricultural Marketing	5
AS 401 Farm Management	5
VED 404 Practicum in General Metals	5
VED 406 Practicum in Building Construction	5
AY 307 General Soils	5
AH 200 Introductory to Animal Husbandry	5
HF 221 Landscaping Gardening	5
ZY 402 Economic Entomology	5
Approved Agricultural Electives	35

ART

Minor: 40 Hours

AT 105 Drawing I	5
AT 106 Drawing II	5
AT 181 Design Fundamentals I	5
AT 182 Design Fundamentals II	5
AT 222 Painting I	5
AT 338 Art History I	5

AT 342 Elementary School Art	5
AT Approved Elective	5

Major: 60 Hours

Minor Requirements	35
AT 322 Painting III	5
AT Approved Elective	5
AT Approved Electives	15

BASIC VOCATIONAL EDUCATION

Students pursuing a course of study in basic vocational education must select both a major and minor within the Department of Vocational and Adult Education.

A. Basic Agricultural Education

Minor: 28 Hours

HF 221 Landscape Gardening	5
HF 224 Plant Propagation	5
AH 204 Animal Nutrition	5
AS 401 Farm Management	5
AS 410 Agriculture Business Management	3
AY 307 General Soils	5

Major: 43 Hours

Minor Requirements	28
AH 303 Livestock Production	5
AY 201 Grain Crops	5
AY 401 Forage Crops	5

B. Basic Building Construction

Minor: 28 Hours

BT 104 Intr. to Buildings	5
BT 105 Drawing and Projections	5
BT 106 Materials and Construction	5
VED 404 Practicum in General Metals	5
VED 405 The School Shop	3
VED 406 Practicum in Building Construction and Maintenance	5

Major: 43 Hours

Minor Requirements	28
BT 220 Mechanics of Structure	5
BT 421 Construction Problems I	5
VED 407 Practicum in Electricity	5

C. Basic Distributive Business**Minor: 26 Hours**

MT 331 Principles of Marketing	5
MT 333 Salesmanship	3
MT 433 Retail Store Management	5
HE 306 Personal Appearance and Social Interaction	3
VED 462 Directed Work Experience	5
Approved Elective	5

Major: 44 Hours

Minor Requirements	26
ACF 211 Intr. to Accounting	5
MN 341 Business Law	5
MT 432 Advertising	3
MT 438 Retail Merchandising	5

D. Basic Metal Technology**Minor: 29 Hours**

EG 102 Engineering Drawing I	2
EG 105 Engineering Drawing II	2
IL 102 Welding Science and Application	1
IL 103 Machine Tool Laboratory	1
IL 104 Sheet Metal Design and Fabrication	1
IL 105 Foundry Technology	1
IL 302 Manufacturing Processes-Machining	3
IL 308 Gages and Measurements	5
IL 406 Problems in Machining	5
VED 404 Practicum in General Metals	5
VED 405 The School Shop	3

Major: 43 Hours

Minor Requirements	29
EG 204 Kinematics of Machines	3
IL 301 Manufacturing Processes-Casting	3
IL 303 Manufacturing Processes-Shaping, Forming, and Fabricating	3
IL 405 Problems in Welding Engineering	5

E. Basic Power Mechanics**Minor: 29 Hours**

EG 102 Engineering Drawing I	2
EG 105 Engineering Drawing II	2
EG 204 Kinematics of Machines	3
IL 103 Machine Tool Laboratory	1
IL 308 Gages and Measurements	5
VED 400 Introduction to Power Mechanics	5
VED 401 Practicum in Small Gasoline Engines	5
VED 402 Automotive Construction and Repair	5
VED 405 The School Shop	3

Major: 44 Hours

Minor Requirements	29
IL 406 Problems in Machining	5
VED 404 Practicum in General Metals	5
Approved Elective	5

BUSINESS EDUCATION***A. General Business****Major: 67 Hours**

MN 200, 201, 202 Typewriting I, II, III	9
ACF 211, 212, 311, 312 Accounting	20
IE 301 Elec. Data Pro. & Computer Prog.	3
MN 305 Records Management	3
MN 310 Principles of Management	5
MT 331 Principles of Marketing	5
MN 341 Business Law	5
EH 345 Business and Professional Writing	5
MN 400 Office Machines	5
MN 405 Administrative Management	5

B. Office Administration**Major: 67 Hours**

MN 200, 201, 202 Typewriting I, II, III	9
MN 210, 211, 212, 300 Shorthand I, II, III, Transcription I	20
ACF 211, 212 Accounting	10

IE 301 Elec. Data Pro. & Computer Prog.	5
MN 305 Records Management	3
MN 310 Principles of Management	5
MN 341 Business Law	5
MN 400 Office Machines	5
MN 403 Secretarial Procedures I	5

C. Business Management**Composite Major-Minor: 80 Hours**

MN 200, 201, 202 Typewriting I, II, III	9
ACF 211, 212, 311, 312 Accounting	20
IE 301 Elec. Data Pro. & Computer Prog.	5
MN 305 Records Management	3
MN 310 Principles of Management	5
ACF 340 Personal Finance or	
MN 447 Job Evaluation	3
MN 341, 342 Business Law	10
EH 345 Business and Professional Writing	5
EC 350 Labor Problems	5
EC 360 Money and Banking	5
MN 400 Office Machines	5
MN 455 Government and Business	5

D. Management Services**Composite Major-Minor: 80 Hours**

MN 200, 201, 202 Typewriting I, II, III	9
MN 210, 211, 212, 300 Shorthand I, II, III, Transcription I	20
ACF 211, 212 Accounting	10
IE 301 Elec. Data Pro. & Computer Prog.	5
MN 305 Records Management	3
MN 310 Principles of Management	5
ACF 340 Personal Finance	3
MN 341 Business Law	5
EC 360 Money and Banking	5
MN 400 Office Machines	5
MN 403 Secretarial Procedures I	5
MN 455 Government and Business	5

*EC 200 and 202 to be taken in social science general education area. For the 5 hours of required mathematics MH 159 or 160 is recommended. MH 161 may profitably be used as an elective.

DISTRIBUTIVE EDUCATION**Minor: 27 Hours**

EC 202 Economics II	5
MT 331 Principles of Marketing	5
MT 333 Salesmanship	3
EC 244 Graphic Method in Business	3
MN 340 Personal Finance	3
EC 350 Labor Problems	5
MT 432 Advertising	3

Major: 57 Hours

MT 433 Retail Store Management	5
MT 434 Purchasing	5
MT 435 Marketing Problems	5
MT 438 Retail Merchandising	5
MN 442 Personnel Management	5
VED 458 Coord. and Supervision in VED	3
VED 462 Directed Work Experience	5

Educational Media**(School Library and Audio-Visual Personnel)****Minor: 28 Hours**

IED 472 Media for Children	4
IED 482 Organization and Administration of Media Centers	5
IED 484 Classification and Cataloging of Media	5
IED 485 Learning Resources	5
IED 486 Media for Young Adults	5
IED 487 Practicum in Media Services	4

ENGLISH**Minor: 20 Hours**

EH 390 Advanced Composition	5
EH 401 Advanced Grammar or	
EH 441 Introduction to the Study of Language	5
Approved Electives 300-400	
English Courses	10

Major: 40 Hours

Minor Requirements	20
EH 357 or 358 Survey of American Literature	5
EH 451 or 452 Shakespeare	5
Approved Electives 300-400	
English Courses	10

HEALTH EDUCATION**Minor: 31 Hours**

HPR 110 Health Science	3
HPR 295 School and Community Health	3
HPR 302 Drug Use and Abuse	3
HPR 395 Health Instruction	3
HPR 403 First Aid	3
NF 119 Nutrition and Man	3
NF 353 Community - Family Health	3
Approved Health Electives	10

Major: 52 Hours

Minor Requirement	31
EH 141 Medical Vocabulary	3
HPR 429 Health Observation	3
IED 476 Exceptional Child	5
PY 428 Public Health	5
Approved Health Elective	3

HEALTH, PHYSICAL EDUCATION AND RECREATION**Minor: 38 Hours**

Theory & Techniques (Choice of 3 courses) HPR 106, 133, 167, 190, 191, 221, 278	6
HPR 201 Introduction to Physical Education	3
HPR 212 Elementary School Activities	3
*HPR 214 Kinesiology	3
HPR 316 Tests and Measurements	3
HPR 318 Principles of Recreation	5
HPR 202, 206, 303, 304 (men)	
HPR 311, 312, 313, 314 (women)	3
HPR 395 Health Instruction	3
VM 220 Anatomy and Physiology	5
*PR. - VM 220, Physics 204.	

Major: 56 Hours

Minor Requirement	38
One minor area composed of courses selected from A, B, or C	10
HPR 295 School and Community Health	3
HPR 401 Organization & Administration	5

A. Health Education

NF 372 Funds. of Nutrition	3
HPR 409 Advanced Health Science	3
HPR 429 Problems of Health Education and Observation of School Children	5
PY 428 Public Health	5
VM 311 General Bacteriology	5

B. Physical Education

Theory & Techniques (Choice of 2 courses) HPR 106, 133, 167, 190, 191, 221, 278	4
HPR 404 Athletic Injuries	3
**HPR 405 Physiology of Muscular Activity	3
HPR 416 Adapted Physical Education	3
HPR 202, 206, 303, 304 (men)	
HPR 311, 312, 313, 314 (women)	6
**Required in Option B.	

C. Recreation

HPR 301 Recreational Leadership	5
HPR 319 Outdoor Recreation	5
CA 345 Creative Crafts	3
SY 405 Urban Sociology	5

HOME ECONOMICS**Major: 68 Hours**

NF 102 Basic Foods and Nutrition	5
CA 110 Contemporary Home Economics	1
CA 113 Housing For Man	3
CA 115 Clothing and Man	3
CA 105 Fundamentals of Clothing	5
CA 116 Art for Everyday Living	3
NF 119 Nutrition and Man	3

NF 202 Meal Management	5
CA 205 Clothing for the Family	3
FCD 207 Principles of Child Development	3
HF 225 Flower Arranging	3
FCD 257 The Family and Human Development	3
CA 233 Home Equipment	
CA 303 The House	Select 1 5
CA 313 Home Furnishings	
CA 343 Interior Home Problems	3
CA 305 Tailoring	3
CA 431 Man-Environmental Relations	2
FCD 323 Management for Modern Living	3
FCD 443 Home Management Residence	5
FCD 457 Family Relations	5
Approved electives	5

Composite Major - Minor

Major Requirements	68
Completion of A, B, C or D	18-20

A. Clothing and Textiles

CA 315 Textiles	5
CA 395 Clothing Design	5
CA 405 Creative Costume Design	5
Approved Electives from 300-400 courses	3-5

B. Family Life and Child Development

FCD 307 Principles of Child Development	5
FCD 317 Adolescent and the Family	5
FCD 417 Guidance of Children	5
FCD 467 Parent Education	5

C. Foods and Nutrition

NF 302 Cultural Aspects of Food Service	3
NF 372 Fundamentals of Nutrition	3
NF 392 Family Nutrition	3
NF 442 Catering	3
Approved electives from 300-400 courses	6-8

D. Home Management, Housing and Equipment

CA 233 Home Equipment or CA 313 Home Furnishings	5
CA 303 The House or CA 343 Interior Home Problems	5
FCD 453 The Consumer and the Market	5
FCD 463 Family Economics	5

INDUSTRIAL ARTS EDUCATION**Minor: 27 Hours**

IL 101 Woodworking	1
IL 102 Welding Science	1
IL 103 Machine Tool Laboratory	1
IL 104 Sheet Metal Design	1
IL 105 Foundry Technology	5
IL 402 Advanced Wood	5
IL 307 General Metals	5
VED 407 Practicum in General Metals	2
CA 345 Creative Crafts	3
VED 246 Instructional Drawing	2
EG 102 Engineering Drawing	2

Major: 50 Hours

VED 406 Practicum in Building Construction and Maintenance	5
VED 409 Teaching Electronics in Industrial Arts	5
Elective in Metal Area	5
Elective in Power Area	5
Elective in Drawing Area	3

MATHEMATICS**Minor: 35 Hours**

MH 160 Algebra and Trigonometry	5
MH 161 Analytic Geom. & Calculus I	5
MH 162 Analytic Geom. & Calculus II	5
MH 163 Analytic Geom. & Calculus III	5
MH 220 Intr. to Analysis I	5
MH 331 Intr. to Modern Alg. I	5
MH 441 Geometry, A Modern View I	5

Major: 55 Hours

Minor requirements	35
MH 221 Intro. to Analysis II	5
MH 332 Intro. to Modern Alg.	5
MH 367 Mathematical Statistics	5
Approved Elective	5

FOREIGN LANGUAGE**A. Spanish****Minor: 30 Hours**

FL 131 Elementary Spanish	5
FL 132 Elementary Spanish	5
FL 231 Intermediate Spanish	5
FL 232 Intermediate Spanish	5
FL 331 Advanced Spanish	5
FL 332 Advanced Spanish	5

Major: 40 Hours

Minor Requirements	30
FL 431 Contemp. Spanish Lit. I	5
FL 432 Contemp. Spanish Lit. II	5

B. German**Minor: 30 Hours**

FL 151 Elementary German	5
FL 152 Elementary German	5
FL 251 Intermediate German	5
FL 252 Intermediate German	5
FL 351 Advanced German	5
FL 352 Advanced German	5

Major: 40 Hours

Minor Requirements	30
FL 451 History of German Literature	5
FL 452 History of German Literature	5

C. French**Minor: 30 Hours**

FL 121 Elementary French	5
FL 122 Elementary French	5
FL 221 Intermediate French	5
FL 222 Intermediate French	5
FL 321 Advanced French	5
FL 322 Advanced French	5

Major: 40 Hours

Minor Requirements	30
FL 421 History of French Literature	5
FL 422 History of French Literature	5

MUSIC**Minor: 28 Hours**

MU 131, 132	10
Material and Organization of Music	
MU 187, 188, 189, 287, 288, 289	6
Applied Music, preferably in one area, but if in two areas four hours must be in one area.	
MU 352, 353	6
Music History II & III	
MU 361	3

Conducting I	
ONE of the following:	
EED 396 (if major interest is in Elementary School Music)	
Music for the Elementary Teachers	
or SID 494 (if major interest in music is instrumental music)	3
Organization of Instrumental Music	
or SED 495 (if major interest is choral music)	
Organization of Choral Music	

Major: 72 Hours

Minor Requirements in Music	28
Band, Choir, Orchestra, or Choral Union	11
MU 133, 231, 232, 233	20
MU 351 Music History	3
MU 387, 388, 389, 487, 488 Applied Music	5
MU 362 Conducting	1
SED 494 Organization of Instrumental Music	
or SED 495 Organization of Choral Music	3
Music Elective	1

Composite Major - Minor: 89 Hours

Major Requirements	72
Completion of A or B below	17

A. INSTRUMENTAL AND CHORAL

SED 494 or SED 495 (the one not completed in the music major)	3
MU 113, 114, 115, 116, 117, 118, or 119	5
MU 477 Music Arranging	3
MU 409 Marching Band Techniques	3
MU 454 Instrumental Music Literature	3

B. CHORAL AND ELEMENTARY**SCHOOL MUSIC**

EED 396 Music for the Elementary Teacher	3
MU Electives	5
MU 478 Music Arranging	3
MU 452 Vocal Literature	3
MU 453 Choral Literature	3

REHABILITATION SERVICES EDUCATION**Major: 57 Hours**

VED 330 Careers in Rehabilitation	5
PG 212 Introduction to Psychology II	3
SY 305 Cultural and Personality	3
SY 406 Introduction to Social Welfare	5
VM 210 Human Physiology	5
SP 273 Group Problem Solving Through Discussion	5
AED 421 Guidance in the Public Schools	5
Approved Electives in Area of Specialization	25

SCIENCE**A. General Science****Major: 45 Hours**

CH 103-4 General Chemistry	10
BI 103 Biology	5
PS 205-6 General Physics	10
SED 473 General Science for Teachers	5
Approved Electives (5 hrs. must be from biological science)	15

B. Biological Science**Minor: 30 Hours**

BI 103 Biology	5
ZY 214 Vertebrate Physiology & Anatomy	5
Approved Electives	20

Major: 45 Hours

Minor Requirements	30
Approved Electives	15

C. Physics*Minor: 27 Hours**

PS 220 Gen. Physics I	4
PS 221 Gen. Physics II	4
PS 222 Gen. Physics III	4
PS 301 Intermediate Electricity and Magnetism	5
PS 305 Modern Physics	5
PS 302 Electronics	5

Major: 42 Hours

Minor Requirements	27
Approved Electives to be selected from:	
PS 415 Intr. to Quantum Mech.	
PS 421 Modern Electronics	
PS 303 Optics	
PS 435 Intr. to Solid State Physics	15

*Physics majors will complete minor in mathematics (including MH 361).

D. Chemistry**Minor: 30 Hours**

CH 103 General Chemistry	5
CH 104 General Chemistry	5
CH 105 General Chemistry	5
CH 207 Organic Chemistry	5
CH 208 Organic Chemistry	5
Approved Elective	5

Major: 45 Hours

Minor requirements	30
Approved Electives	15
Prerequisites for CH 105. Credit in these courses applied to general education requirement in physical science.	

SOCIAL SCIENCE

All students majoring in political science, sociology, economics, or geography, and not minoring in history; and all students minoring in political science, sociology, economics, geography or psychology and not majoring in history; must include in their social science general education requirements the following:

U. S. History 5 hours

Major: 45 Hours

HY 202	United States History	5
EC 200	Economics I	5
PO 209	Introduction to American Government	5
GY 102	or 203 Prins. of Econ. Geography	5
	Approved elective from 300-400 course in U. S. History	5
	Approved electives from 300-400 courses in Sociology, Economics, Political Science and Geography	20

1. Economics**Minor: 30 Hours**

EC 200	Economics I	5
EC 202	Economics II	5
EC 456	Intermediate Macro Economics	5
EC 452	Comparative Economics Systems	5
	Approved 300-400 level economics courses	10

Major: 40 Hours

	Minor requirements	30
EC 274	(Business and Ec. Statistics I)	5
	Approved 300-400 level Ec. courses	5

2. Geography**Minor: 30 Hours**

GY 102	Principles of Geography	5
GY 203	Economic Geography	5
GY 405	Cultural Geography of the World	5
	Approved 300-400 level courses in GY	15

Major: 40 Hours

	Minor requirements	30
	Approved 300-400 level GY Courses	10

3. Sociology**Minor: 30 Hours**

SY 202	Social Problems	5
SY 203	Cultural Anthropology	5
	Approved 300-400 level Sociology Courses	20

Major: 40 Hours

	Minor requirements	30
SY 304	Minority Groups	5
SY 308	Juvenile Delinquency	5

4. History**Minor: 30 Hours**

U. S. HY	(5 hours above freshman level)	10
	Selections from Latin American area	5
	Selections from non-western, non-American area	5
	Approved 300-400 level history courses	10

Major: 40 Hours

	Minor requirements	30
	Selected 300-400 level courses in areas of student's choice providing depth study in one area	10

5. Political Science**Minor: 30 Hours**

PO 209	National Government	5
PO 210	State Government	5
PO 309	Intr. to International Relations or	
PO 312	An Intr. to Comparative Gov.	5
	Approved 300-400 level PO courses	15

Major: 40 Hours

	Minor requirements	30
PO 422	Recent and Contemporary Political Theory	5
PO 340	Political Parties and Politics, PO 323 Municipal Gov. in the U.S., PO 405 Metropolitan Area Gov. Problems or	
PO 445	The Gov. and Politics of the Developing Nations	5

6. Psychology**Minor: 28 Hours**

PG 211	Psychology I	3
PG 215	Quantitative Methods in Psychology	4
PG 330	Social Psychology	4
PG 415	Psychological Testing	5
PG 480	History of Psychology	4
PG	Elective	5
PG 212	Psychology II	3

SPEECH**Minor: 32 Hours**

SP 201	Intr. to Oral Comm.	5
SP 200	Survey of the Bases of Speech	5
SP 273	Group Discussion	5
SED 201 (P)	Communication Problems	2
	Minors select 10 hours from the major requirements listed below:	
SP 311	Advanced Public Speaking	5

Major: 40 or 50 Hours*

	Minor Requirements	32
	Majors select 8-18* hours from the following approved electives:	
SP 220	Interpretative Reading	5
SP 411	Persuasive Speaking	5
SP 230	Fundamentals of Radio and Television Broadcasting	5
SP 451	Principles of Speech Correction	5
SP 411	Persuasive Speaking	5
	Approved Elective	3

*Requirement of 50 hours for concentration in one area only—when program of study includes two or more areas of concentration a minimum of 40 hours must be completed in one area.

Speech Correction****Minor: 33 Hours**

SP 201	Introduction to Oral Comm.	5
SP 311	Advanced Public Speaking	5
SP 301	Phonetics	3
SP 300	The Speech Mechanism	5
SP 460	Introduction to Problems in Hearing	5
SP 451	Principles of Speech Correction	5
SP 401	Psychology of Communication	5

Major: 41 or 51 Hours*

	Minor Requirements	33
	Majors select 8-18** hours from the following approved electives:	
IED 476	The Exceptional Child	5
HPR 409	Advanced Hygiene or	
FED 434	Mental Hygiene	5
SP 453	Advanced Speech Correction	5
	Approved Elective	3

**Additional work required: 200 clock hours in an approved Speech and Hearing Clinic.

THEATER**Minor: 32 Hours**

TH 104	Intr. Theatre I	3
TH 105	Intr. Theatre II	3
TH 106	Intr. Theatre Projects	3
TH 204	Fund. of Acting I: Voice	5
TH 205	Fund. of Acting II: Movement	5
TH 206	Acting I	5
TH 304	Fund. of Stage Design	5
TH 107	Stage Craft I	1
TH 108	Stage Craft II	1
TH 109	Stage Craft Project	1
TH 201	Theatre Artists in Society I	5

TH 202 Theatre Artists in Society II	3
TH 203 Theories of Acting	3
TH 301 History of Theatre in Western Civilization	3

Major: 57 Hours

Minor Requirements	32
TH 305 Design in the Theatre I	5
TH 306 Design in the Theatre II	5
TH 404 Directing I	5
TH 405 Directing II	5
TH 406 Directing III	5
TH 302 History of Theatre in Western Civilization	3
TH 303 History of Theatre in Western Civilization	3

TH 401 Play Analysis	3
TH 402 World Theatre	3
TH 403 Seminar & Theatre Research	3

TRADE AND INDUSTRIAL EDUCATION**Major: 60 Hours**

VED 475-480 Trade and Industrial Exp.†	30
EH 345 Business and Professional Writing	5
MN 310 Business Organization and Management	5
EC 350 Labor Problems	5
MT 331 Principles of Marketing	5
VED 458 Coord. and Supervision of VED	3
VED 246 Instructional Drawing	3
Approved Electives	4

†Credit for VED 475-480 (inc.) (5-5-5-5-5-5) by supervised employment or by examination on basis of journeyman level work experience at the maximum rate of 15 quarter hours for each year of such experience. In those occupations where there is no organized apprenticeship experience beyond the level of learner, the level of learner will correspond to journeyman level. If employment experience required for certification is obtained prior to starting the curriculum, elective coursework may be substituted for these credits. Time required to complete curriculum would be reduced accordingly.

V. Guides for the Completion of Curricular Requirements for the Respective Preparation Programs in Teacher Education

The following curricular outlines set forth requirements and suggestions for preparing teachers to teach in the elementary school, the respective fields of the secondary school, and elementary-secondary in art; theatre; health, physical education and recreation; industrial arts; music; speech, speech correction, and educational media. Provisions are made for meeting the requirements in the pre-professional program, the program in professional education, academic majors and minors, and electives. *Male students may choose six hours of electives in lieu of Basic ROTC in consultation with their academic advisers.* Specified also are the total number of hours required for the completion of each curriculum and the number of hours assigned to each quarter. In general, courses listed should be taken in sequence.

The Dean reserves the privilege of making substitutions in course requirements, provided such modifications do not conflict with state requirements or university regulations as to degrees in Education.

A. Elementary Education (EED)**1. Early Childhood Education Program****FRESHMAN YEAR**

First Quarter		Second Quarter		Third Quarter	
EED 103 Orientation	1	EH 102 English Comp.	3	EED 104 Intr. to Lab. Experiences	1
EH 101 English Comp.	3	BI 104 Biology	5	EH 103 English Comp.	3
BI 101 Biology	5	HY 102 World History	3	HY 103 World History	3
HY 101 World History	3	SP 202 App. Oral Comm.	3	SP 273 Group Prob. Solving	5
GY 102 Prin. of Geog.	5	PE 102 Begin. Swimming or Gr. I	1	Through Discussion (Gr. II)	1
PE 101 Fnds. of Phys. Ed.	1	HPR 211 Sensorimotor Act.	3	Elective	5

SOPHOMORE YEAR

MH 281 Elem. Math	5	MH 282 Elem. Math	5	FCD 307 Growth & Dev. of Children	5
EH 253 English Lit.	3	EH 254 Sur. Eng. Lit.	3	EC 200 Economics	5
SY 201 Intr. Sociology	5	FCD 217 Comparative Family Life	5	PO 209 U.S. Government or	
FED 213 Human Growth and Development	5	SY 203 Cultural Anthropolgy or		HY 201 History of U.S.	5
		SY 202 Social Problems	5	MU 371 Intr. to Music	3
		Elective	3		

First Quarter

PHS 100 Physical Science	5
TH 307 Children's Theatre	3
or	
TH 308 Creative Dramatics	3
AT 342 Elem. Sch. Art	5
IED 472 Media for Children	4
Elective	3

JUNIOR YEAR**Second Quarter**

PHS 101 Physical Science	5
SP 450 Prin. of Sp. Corr.	5
PG 350 Behavior Modification	5
Elective	3

Third Quarter

FED 214 Psych. Fnds. of Education	5
EED 320 Curriculum for Early Childhood Education	10

SENIOR YEAR

FED 320 Social Fnds. of Education	5
EED 420 Curriculum for Early Childhood Education	10

EED 425A Internship in Early Childhood Education	15
--	----

FED 480 Phil. Fnds. of Education	5
EED 455 Analysis of Early Childhood Education Programs	3
FCD 467 Parent Education	5
Elective	5

Total — 210 quarter hours

2. Elementary Education**FRESHMAN YEAR****Second Quarter**

EH 101 English Comp.	3
HY 101 World History	3
BI 101 Prin. of Biology	5
FED 103 Orientation	1
PE 101 Fnds. of Phys. Education	1
Elective	3

EH 102 English Comp.	3
HY 102 World History	3
BI 104 Biology in Human Affairs	5
SP 202 App. Oral Comm.	3
PE 102 Beg. Swimming (or Gr. I)	1
Elective	3

Third Quarter

EH 103 English Comp.	3
HY 103 World History	3
GY 102 Prin. of Geog. or	
GY 203 Economic Geog.	5
EED 104 Intr. to Lab. Experiences (Gr. II)	1
PE	1
Elective	5

SOPHOMORE YEAR

MH 281 Elem. Math.	5
EH 253 Sur. Eng. Lit.	3
SY 201 Intr. Sociology	5
HPR 212 Elem. School Activities	3
Elective	3

MH 282 Elem. Math	5
EH 254 Sur. Eng. Lit. or	
EH 357 Sur. Amer. Lit.	5
EC 200 Economics I	5
MU 371 Intr. to Music	3

MH 283 Elem. Math	5
EH 357-358 Sur. of Amer. Lit.	5
PO 209 U.S. Government or	
HY 201 History of U.S.	5
Elective	3

JUNIOR YEAR

AT 342 Elem. Sch. Art	5
Physical Science	5
Electives	9

SP 450 Prin. of Speech Correction	5
FED 213 Human Growth and Development	5
Physical Science	5
Elective	4

FED 214 Psych. Fnds. of Education	5
EED 301 Elem. Curriculum I, Reading and Other Lang. Arts; Creative Expression	10

SENIOR YEAR

FED 320 Social Fnds. of Education	5
EED 401 Elem. Curriculum II, Math; Natural and Social Sciences	10

EED 425 Professional Internship	15
---------------------------------	----

FED 480 Phil. Fnds. of Education	5
EED 450 Analysis of Instructional Strategies	3
English Elective	3
Electives	9

Total — 210 quarter hours

3. Special Education (Mental Retardation)**FRESHMAN YEAR****Second Quarter**

EH 101 English Comp.	3
HY 101 World History	3
BI 101 Biology	5
PE 101 Fnds. of P.E.	1
EED 103 Orientation	1
Approved Elective	3

EH 102 English Comp.	3
HY 102 World History	3
SP 202 App. Oral Comm.	3
BI 104 Biology	5
PE 102 Beg. Swimming	
Gr. I	1
Approved Elective	3

Third Quarter

EH 103 English Comp.	3
HY 103 World History	3
PHS 100 Physical Sci. I	5
PE Group II	1
EED 104 Intr. to Lab. Experiences	1
Soc. Sci. Elec.	5

SOPHOMORE YEAR

SY 201 Intr. Sociology	5
PHS 101 Physical Sci. II	5
MH 281 Elem. Math	5
Appr. Lit. Elec.	3

MH 282 Elem. Math	5
FED 213 Human Growth and Development	5
Soc. Sci. Elec.	5
Appr. Lit. Elec.	3

MU 371 Intr. to Music or	
EED 396 Music Elem. Tchrs.	3
AT 342 Elem. Sch. Art	5
Appr. Lit. Elec.	3
Appr. Electives	8

JUNIOR YEAR**First Quarter**

FED 214 Psych. Fnds. of Education	5
EED 301 Elem. Curriculum I: Reading and Other Lang. Arts: Creative Expression	10

Second Quarter

FED 320 Social Fnds. of Education	5
EED 401 Elem. Curriculum II: Math; Natural and Social Sci.	10

Third Quarter

IED 476 Except. Child	5
SP 450 Prin. of Speech Correction	5
IED 478 Nature of M.R.	5
Appr. Elective	3

SENIOR YEAR

IED 479 Meth. Tchng. M.R.	5
VED 437 Occup. Train. M.R.	5
IED 480 Spec. Learning Disabilities	5
Appr. Elective	5

IED 425-I Professional Internship	15
-----------------------------------	----

FED 480 Phil. Fnds. of Education	5
HPR 417 P.E. for M.R.	5
Appr. Electives	10

Total — 210 quarter hours

B. Secondary Education (SED)**FRESHMAN YEAR****First Quarter**

EH 101 Eng. Comp.	3
HY 101 World History	3
BI 101 Prin. of Biology	5
SP 202 App. Oral Comm.	3
SED 102 Orientation	1
PE 101 Fnds. of P.E.	1
Elective	1

Second Quarter

EH 102 Eng. Comp.	3
HY 102 World History	3
BI 104 Bio. in Human Affairs	5
Math Elective	5
PE 102 Beg. Swimming or Gr. I	1
Elective	1

Third Quarter

EH 103 Eng. Comp.	3
HY 103 World History	3
Phys. Sci. Elec.	5
Soc. Sci. Elec.	5
SED 104 Intr. Lab. Exp.	1
PE Group II	1
Elective	1

SOPHOMORE YEAR

EH 253 Lit. in Eng.	3
SY 201 Intr. to Soc.	5
Phy. Sci. Elec.	5
Major-Minor	3
Elective	1

FED 213 Human Growth & Development	5
Major-Minor	9
Approved Lit. Elec.	3
Elective	1

FED 214 Psy. Found. of Education	5
Major-Minor	8
Approved Lit. Elec.	3
Elective	1

JUNIOR YEAR

FED 320 Soc. Found. of Education	5
Major-Minor (or approved elec.)	15

Teaching in Major area of Spec.	3
Major-Minor (or approved elec.)	15

Teaching a Program in Major or Minor Area of Spec.	3
Major-Minor (or approved elec.)	15

SENIOR YEAR

Prog. in Area of Specialization	3
Major-Minor (or approved elec.)	15

425 Professional Internship	15
-----------------------------	----

FED 480 Phil. & Historical Foundations of Ed.	5
Major-Minor (or approved elec.)	10

Total — 210 quarter hours

C. Health, Physical Education, and Recreation (HPR)**1. Health Education****FRESHMAN YEAR****First Quarter**

BI 101 Prin. of Biology	5
MH 100 Math. Insights	5
EH 101 English Comp.	3
HY 101 World History	3
HPR 105 Orientation	1
PE 101 Fnds. of P.E.	1

Second Quarter

BI 103 Gen. Anim. Biol.	5
PHS 100 Physical Sci. I	5
EH 102 English Comp.	3
HY 102 World History	3
PE 102 Beg. Swimming or Gr. I	1

Third Quarter

PHS 101 Physical Sci. II	5
HPR 110 Health Science	3
EH 103 English Comp.	3
HY 103 World History	3
HPR 108 Int. Lab. Exper.	1
PE Group II	1

SOPHOMORE YEAR

VM 220 Anatomy and Phys.	5
FED 213 Human Development	5
Appr. Soc. Sci.	5
EH 253 English Lit.	3

VM 221 Anatomy and Phys.	5
FED 214 Psych. Found. Ed.	5
SY 201 Int. to Sociology	5
EH Approved Lit.	3

SY 220 Statistics	5
NF 119 Nutrition and Man	3
EH Approved Lit.	3
HPR 295 School-Com. Health	3
SP 202 App. Oral Commun.	3

JUNIOR YEAR

FED 320 Soc. Found. Educ.	5
Appr. Biol. Sci.	5
HPR 395 Health Instruction	3
NF 353 Com.-Family Health	3
Elective	3

HPR 429 Health Observation	5
EH 141 Medical Vocabulary	3
HPR 302 Drug Use & Abuse	3
HPR 423A Program in H. Ed.	3
Appr. H. Ed.	3

VM 311 Gen. Bacteriology	5
Appr. Biol. Sci.	5
SED T or P (minor)	3
HPR 414A Teaching in H. Ed.	3
HPR 405 First Aid	3

SENIOR YEAR

First Quarter		Second Quarter		Third Quarter	
PY 428 Public Health	5	HPR 425 Prof. Internship	15	FED 480 Phil. Found. Ed.	5
Appr. Biol. Sci.	5			IED 476 Exceptional Child	5
Appr. Health Ed.	5			Appr. Health Ed.	5
Elective	3			Elective	3

Total — 210 quarter hours

2. Health, Physical Education, and Recreation

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
BI 101 Prin. of Biology	5	BI 103 Gen. Anim. Biol.	5	HPR 201 Intr. to Physical	
HPR Theory & Tech.	2	MH 121 or 281 Math	5	Education	5
HPR 105 Orientation	1	PE 102 Beg. Swimming		HPR 110 Health Science	3
PE 101 Fnds. of P.E.	1	or Gr. I	1	PE Group II	1
				HPR 108 Intr. to Lab.	
				Exper.	1
				Electives	2

SOPHOMORE YEAR

VM 220 Anat. & Physiol.	5	FED 214 Psych. Found.		SP 202 App. Oral Comm.	3
FED 213 Human Develop.	5	of Educ.	5	EC 200 Economics I	5
HPR 212 Elem. Sch. Act.	3	SY 201 Intr. to Sociology	5	PS 204 Physics	5
HPR Theory & Technique	2	HPR Theory & Technique	2	Approved Lit. Elective	3
EH 253 Lit. in English	3	HY 201 or 202 U.S. History	5	Electives	3

JUNIOR YEAR

HPR 295 Sch. Com. Health	3	HPR 423B Program HPE	3	HPR 318 Principles of Rec.	5
FED 320 Social Found.		Electives	9	HPR 414B Teaching HPE	3
of Educ.	5	Approved Literature	3	HPR Teach. & Coach.	3
HPR 316 Tests &		HPR 395 Health Instr.	3	Electives	6
Measurements	3				
HPR 214 Kinesiology	5				
HPR Option Area					
A, B, or C	3				

SENIOR YEAR

HPR 401 Org. & Admin.	3	HPR 425 Professional		FED 480 Phil. Found.	
HPR Option A, B, or C	5	Internship HPE	15	of Educ.	5
Teach. or Program				SED 473 Gen. Sci. for	
(minor)	3			Teachers or	
Electives	8			Physical Sci. elective	5
				HPR Option A, B, or C	3
				Electives	5

Total — 210 quarter hours

D. Vocational and Adult Education (VED)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
BI 101 Prin. of Biology	5	BI 102 Gen. Plant Biol.		VED 103 Intr. to Lab.	
VED 103 Freshman Orient.	1	or		Experiences	1
PE 101 Fnds. of P.E.	1	BI 103 Gen. Anim. Biol.		PE Group II	1
Approved Elective	2	or		Approved Physical Science	
		BI 104 Biol. in Hum.		Elect.	5
		Affairs	5	Approved Math	5
		PE 102 Beg. Swimming		Approved Elective	1
		or Gr. I	1		
		SP 202 App. Oral Comm.	3		
		Approved Elective	1		

SOPHOMORE YEAR

SY 201 Intr. to Socio.	5	EC 200 Economics I*	5	FED 214 Ed. Psychology	5
Literature Elective	3	FED 213 Human Develop.	5	VED 346 Voc., Tech., &	
Approved Physical Sci.	5	Lit. Elective	3	Pract. Arts Ed.	3
Approved Elective	6	EH 345 Bus. & Prof.	5	Approved Soc.	
		Writ.**	5	Sci. Elect.	5
		EH 304 Tech. Writ.***	3	Literature Elec.	3
		JM 315 Ag. Journal****	3	Approved Elec.	1
		Approved Elective	1		

*AS 202 for Agricultural Educ. majors.

**Rehabilitation Services majors.

***Industrial Arts, Distributive Educ., and Trade and Industries majors.

****Agricultural Education majors.

I. Adult Education

First Quarter	
VED 413 Nat. of Adult Education	5
Approved Subj. Matter Electives**	9
FED 320 Soc. Found. of Education	5

VED 466 Educ. Activities for Adult Gps.	3
Approved Subj. Matter Electives**	15

JUNIOR* YEAR	
Second Quarter	
VED 414 Prog. in Adult Education	3
Approved Subj. Matter Electives**	10
VED 410 Occup. Infor.	3

SENIOR YEAR	
VED 425 Professional Internship in Adult Educ.	15

Third Quarter	
VED 415 Tch. in Adult Education	3
VED 456 Lrng. Resources in Adult Ed.	3
Approved Subj. Matter Electives**	13

FED 480 Phil. Found. of Education	5
VED 491 Probs. in Tchng. Disadvantaged Adults	3
Approved Subj. Matter Electives**	10

Total — 210 quarter hours

*A minor in Adult Education may be earned by completing VED 413, VED 414, VED 466, and VED 491 plus approved electives for a total of 24 hours.

**Approved electives in not more than two subject matter fields of concentration.

2. Agricultural Education

First Quarter	
HF 221 Landscape Gardening	5
AH 200 Intr. to Animal Husbandry	5
Approved Agri. Elective	5
FED 320 Soc. Found. of Educ.	5

VED 466 Teaching Out-of-School Groups	3
AS 301 Agric. Marketing	5
Approved Animal, Poultry, or Dairy Science Elective	5
AS 401 Farm Management	5

JUNIOR YEAR	
Second Quarter	
VED 404 Pract. in Gen. Metls.	5
AY 307 General Soils	5
VED 414 Program in Agric.	3
VED 410 Occup. Infor.	3

SENIOR YEAR	
VED 425A Professional Internship in Agric.	15

Third Quarter	
VED 415 Teaching in Agric.	3
VED 456 Learning Res. in Agric.	3
VED 406 Pract. in Bldg. Const. & Maint.	5
Approved Agronomy Elect.	5
Approved Agric. Elect.	2

FED 480 Phil. Found. of Education	5
Approved Agriculture Electives	13

Total — 210 quarter hours

APPROVED ELECTIVES	
AS 410 Agricultural Business Management	
AS 411 Economic Development Of Rural Resources	
AN 350 Soil and Water Technology	
AN 351 Agricultural Machinery Technology	
AN 352 Tractor and Engine Technology	
AY 201 Grain Crops	
AY 401 Forage Crops	

APPROVED ELECTIVES	
AY 414 Principles & Use of Herbicides in Crop Production	
AS 204 Animal Biochemistry & Nutrition	
AS 302 Feeds and Feeding	
AS 303 Livestock Production	
AS 200 Fundamentals of Dairying	
FY 313 Farm Forestry	
HF 224 Plant Propagation	

APPROVED ELECTIVES	
HF 323 Greenhouse Const. & Management	
HF 201 Orchard Mgtment.	
HF 308 Vegetable Crops	
PH 301 General Poultry Husbandry	
VED 246 Instructional Drawing	
VED 405 The School Shop	
VED 407 Practicum in Electricity	

3. Basic Vocational Education

First Quarter	
Major Electives	10
Minor Electives	5
FED 320 Soc. Found. of Education	5

VED 423 Program in Basic VED (Minor)	3
Major Electives	15

JUNIOR YEAR	
Second Quarter	
VED 414 Program in Basic VED (Major)	3
Major Elective	5
Minor Elective	5
VED 410 Occup. Infor.	3

SENIOR YEAR	
VED 425 Professional Internship in Basic VED	15

Third Quarter	
VED 415 Teaching in Basic VED	3
VED 456 Learning Resources in VED	3
Major Elective	7
Minor Elective	5

FED 480 Phil. Found. of Education	5
Major Elective	5
Minor Electives	8

Total — 210 quarter hours

NOTE: See page 130 for the listing of approved major and minor electives in the basic vocational specialization fields of agriculture, building construction, distributive business, metals technology and power mechanics.

4. Distributive Education

JUNIOR YEAR

First Quarter	
MT 331 Prin. of Marketing	5
MT 333 Salesmanship	3
EC 244 Graphic Methods	3
in Business	3
Electives	3
FED 320 Soc. Found. of	5
Education	5

Second Quarter	
VED 414 Prog. in Dist.	5
Education	5
MT 432 Advertising	3
MT 433 Retail Store	5
Mgmtmt.	5
HE 355 Consumer Textiles	3
VED 410 Occup. Infor.	3

Third Quarter	
VED 415 Teaching in Dist.	5
Education	5
VED 456 Learning Res. in	3
Dist. Educ.	3
MT 434 Purchasing	5
EC 350 Labor Problems	5

SENIOR YEAR

VED 466 Teaching Out-of-	3
Sch. Groups	3
MT 435 Marketing Probs.	5
MT 438 Retail Mer-	5
chandising	5
VED 458 Coord. & Super-	3
vision in VED	3
Electives	2

VED 425 Professional In-	15
ternship in Dist.	15
Educ.	15

FED 480 Phil. Found. of	5
Education	5
MN 442 Personnel Mgmtmt.	5
VED 462 Directed Work	5
Experience	5
Electives	3

Total — 210 quarter hours

NOTE: Electives to be taken in Adult Education, Psychology, Sociology or in other subject-matter areas which will aid the student in teaching Distributive Education in the high school, at post-secondary level, and adult programs.

5. Industrial Arts

JUNIOR YEAR

First Quarter	
Selected Courses in:	
Wood Area	5
Metals Area	5
Electricity Area	5
FED 320 Soc. Found.	5
of Educ.	5

Second Quarter	
VED 414 Prog. in Ind. Arts	3
Selected Courses in:	
Electronics Area	5
Drafting Area	5
VED 410 Occup. Infor.	3

Third Quarter	
VED 415 Teaching in Ind.	3
Arts	3
VED 456 Learning Res. in	3
Ind. Arts	3
Selected Courses in:	
Drafting Area	3
Basic Ind. Lab.	2
Course	2
Industrial Crafts	3
Metals Area	5

SENIOR YEAR

VED 466 Teaching Out-of-	3
School Groups	3
Selected Courses in:	
Power Mechanics	5
Area	5
Wood Area	5
Minor (Science,	5
English, History,	5
or Economics)	5

VED 425 Professional In-	15
ternship in Ind.	15
Arts	15

FED 480 Phil. Found. of	5
Educ.	5
Selected Courses in:	
Minor (Science, Eng.,	9
History or Econ.)	9
Program Minor	3

Total — 210 quarter hours

6. Rehabilitation Services Education

JUNIOR YEAR

First Quarter	
PG 212 Intr. to Psy. II	4
SY 305 Culture and	3
Personality	3
Selected Electives	3
FED 320 Soc. Found. of	5
Educ.	5

Second Quarter	
VED 414 Program in	3
Rehabilitation	3
SY 406 Intr. to Soc.	5
Welfare	5
Selected Electives	8
VED 410 Occup. Infor.	3

Third Quarter	
VED 415 Teaching in	3
Rehabilitation	3
VED 456 Learning Res. in	3
Rehabilitation	3
VM 210 Human Physiology	5
Selected Electives	7

SENIOR YEAR

VED 466 Teaching Out-of-	3
Sch. Groups	3
VED 435 Voc. Eval. in	5
Rehabilitation	5
AED 421 Guidance in	5
Public Schools	5
Selected Electives	5

VED 425 Professional In-	15
ternship in	15
Rehabilitation	15

FED 480 Phil. Found. of	5
Education	5
SP 273 Group Problem	5
Solving	5
Selected Electives	10

Total — 210 quarter hours

NOTE: Rehabilitation majors required to take minimum of 25 elective hours in a selected area of special interest.

7. Trade and Industrial Education

JUNIOR YEAR

First Quarter

VED 475 Trade & Teach. Experience*	5
EH 345 Business & Prof. Writing	5
MN 310 Business Organ. & Mangmnt.	5
FED 320 Soc. Found. of Educ.	5

Second Quarter

VED 414 Prog. in Trade & Ind. Educ.	3
EC 350 Labor Problems	5
VED 476 Trade & Ind. Exp.	5
VED 410 Occup. Infor.	3

Third Quarter

VED 415 Teaching in Trade & Ind. Education	3
VED 456 Learn. Res. in Trade & Ind. Education	3
VED 477 Trade & Ind. Exp.	5
MT 331 Principles of Marketing	5

SENIOR YEAR

VED 466 Teaching Out-of- Sch. Groups	3
VED 474 Org. of Inst. in T. & I.	5
VED 478 Trade & Ind. Experience	5
VED 458 Coord. & Supr. in VED	3

VED 425 Professional In- ternship in Trade & Ind. Ed.	15
VED 479 Trade & Ind. Experience	5

FED 480 Phil. Found. of Education	5
VED 480 Trade & Ind. Experience	5
VED 246 Inst. Drawing	3
Electives	4

Total — 210 quarter hours

*Credit for VED 475-480 (inc.) (5-5-5-5-5-5) by supervised employment or by examination on basis of journeyman level work experience at the maximum rate of 15 quarter hours for each year of such experience. In those occupations where there is no organized apprenticeship experience beyond the level of learner, the level of learner will correspond to starting the curriculum, elective coursework may be substituted for these credits. Time required to complete curriculum would be reduced accordingly.

School of Engineering

J. GRADY COX, *Dean*

CHARLES H. HOLMES, *Assistant Dean*

The Profession

THE ENGINEERING PROFESSION applies a knowledge of the mathematical and natural sciences in developing ways to utilize the materials and forces of nature for the benefit of mankind. The various curricula in engineering prepare the students to work and serve in this profession. It is largely through the efforts of the engineer that it is now possible for our American civilization to consider the elimination of want.

Liberal Education

As a professional man the engineer must have a broad general education so that he may take his place not only in the technical councils of American citizenry, but in social and political councils as well. It is essential, therefore, that he have a truly liberal education and the engineering curricula are designed with this objective in mind.

Admission Requirements

As indicated above, the requirements for a good liberal education necessitate high school preparatory work of high intellectual quality and of considerable breadth. For admission to the curriculum in Pre-Engineering, graduation from an approved secondary school with a minimum of 15 units, or the equivalent as shown by examination, is required. The following program is recommended as *minimum* preparation for a college engineering education: English, four units; mathematics (including algebra, geometry, trigonometry, and analytic geometry); chemistry, one unit; mechanical drawing, one unit; history, literature, social science, two or three units. Physics and foreign languages are recommended but are not required for admission.

The ability to communicate with his fellow man is absolutely essential to the engineer. The secondary school student needs four years of English in order to gain the ability to read, write, speak, and listen with precision, facility, clarity, and understanding. The achievements of engineering have made possible communication and travel throughout the world which in reality have brought all countries closer together. All educated Americans and particularly engineers should recognize this fact and prepare for it by studying at least one foreign language as early as possible—even in elementary school or junior high school. The study of at least one foreign language (including the classical languages) for a minimum of two years in secondary school is highly recommended but not required for admission.

Mathematics and the sciences are the fundamentals upon which the profession of engineering is built. The prospective engineering student must acquire the best possible background of mathematics in elementary school, junior high, and high school. The emphasis should be on algebra, geometry, trigonometry, and analytic geometry so that a student entering engineering school will be able to start with analytic geometry and calculus. Mathematics courses should be deep and rigorous and preferably of modern design. One year of chemistry is required, and a year of physics is highly desirable. Biology is advantageous but should not be selected in preference to either physics or chemistry. Science courses should stress concepts and methods of science rather than the wonders of science.

The prospective engineer is educated not for engineering alone but also for becoming an adult member of society. This requires an understanding of society, its culture, and its origin; such an understanding can be gained partially by the study of literature, history, economics, the arts, and other branches of humanities and social sciences. Preparatory courses of high intellectual quality in these areas are necessary for all candidates for university-level education.

Applicants are admitted to curricula in the School of Engineering by the Engineering Admissions Committee after satisfactory performance in the appropriate freshman program. Applicants for admission to Aerospace, Chemical, Civil, Electrical, Industrial, Materials, Mechanical, and Textile Engineering, as well as Textile Chemistry, will be approved upon completion with satisfactory grades of prescribed courses in mathematics through MH 162; English Composition, nine hours; chemistry, ten hours; engineering graphics, two hours; industrial laboratories, two hours; and physical education, three hours.

Admission to Aviation Management and Textile Management will be approved upon satisfactory completion of 48 quarter hours of work including all prescribed freshman work in English, mathematics, engineering graphics, physical education, industrial laboratories, and chemistry. *A student who has not proceeded from Pre-Engineering to his field of major interest in engineering after the completion of six quarters may continue to register in Pre-Engineering only by special permission of the Dean of Engineering.*

Engineering Curricula. — Curricula offered are designed to meet the educational requirements of the engineering profession. The program in the fundamental sciences of mathematics, chemistry, and physics is followed by a study of basic engineering sciences. Specialized or departmental courses follow in the third and fourth years. A parallel program emphasizing the humanistic-social studies, including history, literature, economics, philosophy and similar courses is followed throughout the four years having as its objective a good general education for the engineering student.

Curricula accredited by the Engineers' Council for Professional Development lead to the degrees of Bachelor of Aerospace Engineering, Bachelor of Chemical Engineering, Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Industrial Engineering, and Bachelor of Mechanical Engineering. An accredited curriculum in Agricultural Engineering is offered by the School of Agriculture.

A curriculum in Materials Engineering leads to the degree of Bachelor of Materials Engineering. This curriculum is administered through the Department of Mechanical Engineering.

A curriculum in Textile Engineering leads to the degree of Bachelor of Textile Engineering. A curriculum in Textile Chemistry leads to the degree

of Bachelor of Textile Chemistry. This latter curriculum is designed to train students in the chemistry of man-made fibers and in the theory and practice of textile dyeing and finishing.

Management Curricula.—Two management curricula leading to the degrees of Bachelor of Aviation Management and Bachelor of Textile Management prepare young men and women for a wide range of administrative and managerial positions in industry. The program of study in the freshman year provides a period of orientation, guidance, and selection. Freshmen are registered in the Pre-Engineering Program as Pre-Engineering Management students, and are admitted to management curricula upon successful completion of the freshman program as outlined above.

Military Training. — *All curricula in the School of Engineering indicate a total requirement of six hours of military training. At his option, the student may choose electives in lieu of this requirement in consultation with his Department Head.*

Graduate Degrees. — Master of Science degrees are offered in the areas of Aerospace Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering. The Doctor of Philosophy degree is offered in the areas of Aerospace Engineering, Electrical Engineering, and Mechanical Engineering. For requirements for these degrees, see the Graduate School Bulletin.

Service Departments. — The Departments of Engineering Graphics and Industrial Laboratories are service departments to the School of Engineering. However, the courses offered in these departments may also be taken by students in other schools who may find them useful in their particular fields. The Department of Industrial Laboratories, in cooperation with the School of Education, offers a program for the professional and technical training of Industrial Arts teachers for elementary and secondary schools. (See School of Education for major and minor requirements.) *As of July 1, 1970, these two departments merged into one under the new name of Department of Technical Services.*

Co-operative Education Program. — The Co-operative Education Program is offered in all curricula of the School of Engineering. Refer to page 44 for a brief description of the program and write to the Director, Co-operative Education, Auburn University, Auburn, Alabama 36830, for a booklet which gives additional information.

Engineering Extension Service. — The Engineering Extension Service helps to extend the resources of the School of Engineering to the people, businesses, and industries of the state. Most of the programs of this expanding service take the form of short courses, conferences, clinics, and seminars. For further information, write to the Director, Engineering Extension Service, 107 Ramsay Hall.

Auburn School of Aviation

ROBERT G. PITTS, *Director*

GARY W. KITELEY, *Associate Director*

ROBERT G. BOSTON, *Airport Manager*

The Auburn School of Aviation was established in 1942 as a department of the School of Engineering to offer flight education for resident and extension students of the University, for the Armed Forces, and for the general public;

and to serve the citizens of Alabama and the Southern Region by providing other services in the broad field of aviation. The School cooperates fully with the Federal Aviation Administration in conducting special aviation education programs. At the present time the school offers flight courses for private, commercial, multi-engine, instrument and flight instructor pilot certificates and ratings. These courses are offered for credit through the Aviation Management Curriculum.

The University is exceptionally well equipped to conduct pilot training programs inasmuch as it owns a large modern airport of 325 acres conveniently located within two miles of the campus. The landing field has two paved runways 4,000 feet long. Other facilities include two large hangars and a modern Administration Building. The school currently operates ten single engine aircraft, two light twin engine aircraft and a DC-3 transport plane.

In addition to the training of pilots, such other public service accommodations as airplane storage, servicing, maintenance, and repair are provided at the airport. In conjunction with the Aerospace Engineering Laboratories located on the campus, the airport serves as an excellent laboratory of practical training for students enrolled in the curricula of Aviation Management and Aerospace Engineering. Because of the excellent aviation facilities, the University has been fully certified by the Federal Aviation Administration as an Approved Ground and Flight School with examining authority for private pilots. The school also holds an air taxi operating certificate with authority to provide charter transportation anywhere in the United States.

The Director of the Auburn School of Aviation is an Aircraft Inspection Representative and the associate director is a designated pilot examiner for the Federal Aviation Administration.

Pre-Engineering

PAUL W. CROUCH, JR., *Assistant to the Dean for Pre-Engineering*

The Pre-Engineering Program consists of a freshman program of studies to prepare students for admission to the School of Engineering with sophomore standing. This program is designated Pre-Engineering Management (PNM) for students in the management curricula, Pre-Chemical Engineering (PCN) for students in the Chemical Engineering curriculum, and Pre-Engineering (PN) for all other curricula.

The freshman Pre-Engineering curriculum shown below is uniform for seven Engineering curricula: namely, Aerospace, Civil, Electrical, Industrial, Materials, Mechanical, and Textile Engineering. It and the Pre-Chemical Engineering curriculum are both designed for students whose High School records and ACT or College Board (SAT) scores indicate that they are capable of being successful in Mathematics 161, Chemistry 103, and Engineering Graphics 106 during their first quarter in school. *Students required to schedule courses below these levels in mathematics, and/or chemistry are expected to plan, with the assistance of the Assistant to the Dean for Pre-Engineering, a program of work depending upon their aptitude and extent of high school preparation.*

A student who has not proceeded from Pre-Engineering to his field of major interest in engineering after the completion of six quarters may continue to register in Pre-Engineering only by special permission of the Dean of Engineering. Furthermore, Junior standing cannot be granted to any student in the Pre-Engineering Program regardless of the number of hours completed.

Three-Quarter Pre-Engineering Curriculum

First Quarter		Second Quarter		Third Quarter	
✓MH 161 An. Geom. & Cal.	5	✓MH 162 An. Geom. & Cal.	5	✓MH 163 An. Geom. & Cal.	5
✓CH 103 Founds. of Chemistry I	4	CH 104 Founds. of Chemistry II	4	PS 220 Gen. Physics I	4
✓CH 103L Gen. Chem. Lab.	1	CH 104L Gen. Chem. Lab.	1	EH 103 English Comp.	3
✓CH 101 English Comp.	3	CH 102 English Comp.	3	HY 101 World History	3
✓EG 106 Graphical Meth.	2	IL 100 Intr. to Mfg. Proc.	2	Basic ROTC	1
Basic ROTC	1	Basic ROTC	1	PE Physical Education	1
PE Physical Education	1	PE Physical Education	1		

*Students whose composite ACT scores are lower than 25 or whose total SAT scores are less than 1190 are enrolled in CH 101, followed by CH 102 and CH 103 laboratory, followed by CH 104 and CH 104 laboratory.

**Students who have not had at least one year of mechanical drawing in high school must complete EG 102 before scheduling EG 106.

Curricula in Engineering

Humanistic-Social Studies. — The engineer must be more than a specialist. If he is to function effectively in his profession for the benefit of society, he must be aware of the social and humanistic implications of his activities and be equipped to assume his responsibilities in these areas. To assist him in this preparation, the various engineering curricula are arranged so that a student will take approximately 30 quarter-credit hours of humanistic-social studies. Some of the courses are prescribed while others must be selected by the student from an approved list. In addition to the specified courses in English Composition and World History, *the University requires that the student take at least one course from each of the areas of Humanities and Social Sciences.* The courses are either prescribed, elective, or a combination, depending upon the specific engineering curriculum. *The Humanistic-Social Electives shall be selected from meaningful sequences, whenever possible,* the details of such approved sequences and courses being available in the offices of the Assistants to the Dean and the Department Heads. Other sequences may be elected with the approval of the student's Department Head. A variety of sequences in the Humanities and the Social Sciences are available in the areas listed below:

Humanities

Fine Arts
History

Literature
Philosophy

Social Sciences

Anthropology
Economics
Political Science

Psychology
Psychology — Sociology
Sociology

Department of Aerospace Engineering

The curriculum in Aerospace Engineering provides an especially good educational background for those wishing to enter the many areas of today's major scientific effort — conquest of space. It also places emphasis on conventional aircraft, missiles and aero-propulsion systems. The first two years of the curriculum are devoted to the basic subjects of mathematics, physics and mechanics. The last two years deal with such broad areas as aerodynamics, design, propulsion, structures and space science. During the senior year students may schedule technical electives in several fields of specialization. The Aerospace Engineering Curriculum also serves as an excellent background for graduate work and research.

Curriculum in Aerospace Engineering (AE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

SOPHOMORE YEAR

First Quarter	Second Quarter	Third Quarter
MH 264 An. Geom. & Cal. — 5	MH 265 Diff. Equat. — 3	AE 300 Aerospace Anal. I — 3
PS 221 General Physics II (Lab.) — 4	PS 222 General Physics III (Lab.) — 4	EE 262 Circuits — 3
ME 205 Applied Mechanics — Statics — 4	ME 321 Dynamics I — 4	ME 207 Strength of Materials I — 3
AE 203 Aerospace Fundamentals (Lab.) — 3	ME 301 Thermodynamics I — 4	ME 340 Fluid Mechanics I — 3
Basic ROTC — 1	HY 102 World History — 3	HY 103 World History — 3
	Basic ROTC — 1	Basic ROTC — 1

JUNIOR YEAR

EE 273 Electronic Devices — 3	EE 381 Electromag. Devices (Lab.) — 4	AE 409 Aero. Struct. II (Lab.) — 5
AE 302 Airloads (Lab.) — 4	PS 320 Modern Physics — 3	AE 311 Aero. Mat. & Math. of Construction — 2
AE 303 Theor. Aero. I — 3	AE 304 Theor. Aero. II (Lab.) — 4	AE 415 Jet Propulsion — 5
AE 307 Aero. Struct. I (Lab.) — 5	AE 305 Flight Performance — 2	AE 326 Fund. of Aerospace Dyn. — 3
ME 202 Engr. Mat. Sci.-Structure — 3	AE 310 Aero. Anal. II — 4	*Hum.-Soc. Electives — 3

SENIOR YEAR

AE 432 Astrodynamics I — 3	AE 433 Astrodynamics II — 3	AE 449 Aero. Design II (Lab.) — 1
AE 400 Viscous Aero. (Lab.) — 4	AE 448 Aero. Design I (Lab.) — 1	AE 402 Aero. Problems II — 1
AE 429 Aircraft Vibration & Flutter — 3	AE 441 Dynamic Stab. & Control — 3	AE 434 Aero. Syst. Anal. — 3
AE 439 Static Stability & Control — 3	AE 401 Aero. Problems I — 1	Technical Elective — 6
*Hum.-Soc. Elective — 5	Technical Elective — 3	*Hum.-Soc. Elective — 6
	*Hum.-Soc. Elective — 6	

Total — 208 quarter hours

*See page 146 for the selection of Humanistic-Social Electives. Six hours of Advanced ROTC may be substituted for six hours of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

AE 335 Rotary Wing Aerodynamics — 3	AE 428 Space Propulsion Systems — 5
AF 414 Equilibrium Gas Dynamics — 3	AF 435 Elements of V/STOL Flight — 3
AE 416 Rocket Propulsion I — 3	AE 442 Automatic Stability & Control — 3
AE 417 Rocket Propulsion II — 3	AE 445 Missile Aerodynamics — 5
AE 420 Flight Vehicle Structures I — 3	ME 421 Heat Transfer — 4
AE 421 Flight Vehicle Structures II — 3	ME 422 Transport Phenomena — 3
AE 424 Nonequilibrium Gas Dynamics — 3	PS 405 Nuclear Physics — 3

Aviation Management

The curriculum in Aviation Management provides education for men and women who plan management careers with the airlines, general aviation, manufacturing, governmental agencies or the military services. The study of fundamental aerospace courses is combined with specified subjects in industrial engineering, business management and selected electives to provide preparation for the various specific functions of the aerospace industries including general management, production, operations, flying, maintenance, and education and training. Laboratory experience in aviation management and flight is provided through the university owned and operated airport in which the students are given the opportunity to participate in administration, training and aircraft maintenance and servicing. The Aviation Management curriculum also provides a broad educational background of fundamental philosophies, theories, and concepts needed for research and study at the graduate levels.

Curriculum in Aviation Management (AM)

FRESHMAN YEAR

First Quarter

EH 101 English Comp.	3
HY 101 World History	3
MH 160 Algebra & Trig.	5
IL 102 Weld. Sci. & App.	1
EG 102 Engr. Drawing I	2
Basic ROTC	1
PE Physical Education	1

Second Quarter

EH 102 English Comp.	3
HY 102 World History	3
MH 161 An. Geom. & Cal.	5
IL 103 Machine Tool Lab.	1
EG 104 Descrip. Geom.	2
Basic ROTC	1
PE Physical Education	1

Third Quarter

EH 103 English Comp.	3
HY 103 World History	3
MH 162 An. Geom. & Cal.	5
IL 104 Sheet Metal	1
EG 105 Engr. Drawing II	2
Basic ROTC	1
PE Physical Education	1

SOPHOMORE YEAR

EC 200 Economics I	5
IE 201 Indus. Admin.	3
AM 201 Elem. Aeronaut.	5
PS 205 Intr. Physics	5
Basic ROTC	1

AM 202 Aerospace History	3
EC 274 Bus. & Econ. Statistics I	5
PS 206 Intr. Physics	5
IE 204 Computer Program	3
Basic ROTC	1

PO 209 Intr. to Am. Govt.	5
†SP 202 App. Oral Comm.	3
ACF 215 Fund. Gen. & Cost Accounting	5
PG 211 Psychology I	3
Basic ROTC	1

JUNIOR YEAR

AM 311 Propul. Fund.	5
MN 341 Business Law	5
AM 305 Aviation Meteorology	5
IE 316 Electronic Data Processing Sys.	4

AM 312 Guidance & Control Fund.	5
EH 304 Technical Writ.	5
IE 302 Prod. Control Tech.	3
IE 310 Motion & Time Study	5

AM 309 Aerospace Legislation	3
IE 320 Engr. Economy	5
MN 310 Prin. of Mgt.	5
AM 337 Air Transport	5

SENIOR YEAR

PG 461 Indus. Psychol.	5
AM 416 Airport Mgt.	5
Technical Elective	5
*Hum.-Soc. Elective	4

AM 417 Airline Oper.	5
MN 442 Personnel Mgt.	5
Technical Elective	5
*Hum.-Soc. Elective	3

AM 402 Aerospace Veh. Systems	5
EC 445 Indus. Relations or	
MN 380 Indus. Mgt.	5
AM 401 Aeronautical Seminar	1
Technical Elective	5

Total — 207 quarter hours

†Six hours of Advanced ROTC may be substituted for SP 202 (3 hrs.) and three additional hours of Humanistic-Social Electives, or 6 hours of Humanistic-Social Electives.

*See page 146 for the selection of Humanistic-Social Electives. Technical Electives must be approved by the Department Head.

Department of Chemical Engineering

The rapidly growing chemical industry in the southern region, and more particularly in Alabama, is providing exceptional opportunities for chemical engineering graduates to obtain employment in familiar surroundings and to contribute to the economy and well-being of the state.

Simply stated, the chemical engineer is responsible for producing a chemical product. This may be an individual compound such as an acid, a base or a gas or it may be an industrial product such as paper, synthetic fibers, polymers, fertilizers, various agricultural chemicals, petro-chemicals or petroleum products.

The program leading to the bachelor's degree in chemical engineering consists almost entirely of broad scientific and engineering principles which have numerous applications in the chemical and related industries. Those students who elect to continue their education through one or more advanced degrees are qualified for better positions and often make more rapid progress than those with only the bachelor's degree.

The broad university training provided, when supplemented by professional experience, enables graduates to qualify for positions as engineers in production, research and development, sales engineering, plant design and management.

The curriculum in chemical engineering is offered under both the regular and the co-operative plan. See the Co-operative Education program.

Curriculum in Chemical Engineering (CN)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
CH 111 Gen. Chemistry	5	CH 112 Gen. Chemistry	5	CH 113 Gen. Chemistry	5
MH 161 An. Geom. & Cal.	5	MH 162 An. Geom. & Cal.	5	MH 163 An. Geom. & Cal.	5
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
*EG 106 Graphical Methods	2	*IL 100 Intr. to Manu-	2	*HY 101 World History	3
Basic ROTC	1	facturing Proc.	2	Basic ROTC	1
PE Physical Education	1	Basic ROTC	1		
		PE Physical Education	1		

SOPHOMORE YEAR

CN 101 Chemical Engr.		PS 221 General Physics II	4	CN 200 Computers in	
Fund.	1	CH 303 Organic Chem.	5	Chemical Engr.	2
ME 202 Engr. Materials		MH 265 Diff. Equations	3	CH 304 Organic Chem.	5
Sci. Structures	3	HY 103 World History	3	MH 266 Linear Algebra	3
MH 264 An. Geom. & Cal.	5	IE 211 Engr. Statistics I	3	PS 222 General Physics III	4
PS 220 General Physics I	4	Basic ROTC	1	CN 300 Material & Energy	
HY 102 World History	3			Balances I	3
Basic ROTC	1			Basic ROTC	1
PE Physical Education	1				

JUNIOR YEAR

CN 301 Material & Energy		CH 408 Physical Chem.	5	CN 326 Energy Transport	5
Balances II	3	CN 302 Chem. Engr. Anal.	3	CN 390 Intr. to Chem.	
CH 407 Physical Chem.	5	CN 324 Momentum		Engr. Thermo-	
MH 362 Engr. Math	3	Transport	3	dynamics	3
ME 205 Applied Mech-		ME 207 Strength of		Tech. Elective	3
anics-Statics	4	Materials I	3	**Hum.-Soc. Elective	5
PS 320 Modern Physics	3	EE 262 Circuits	3		

SENIOR YEAR

CN 424 Mass Transport	5	CN 401 Chem. Engr.		CN 491 App. Kinetics	4
CN 430 Analog Computation	3	Economics	2	CN 484 Chem. Engr. Design	4
CN 490 Chem. Engr.		CN 425 Stagewise		CN 470 Seminar	1
Thermodynamics	5	Operations	4	Tech. Elective	3
**Hum.-Soc. Elective	5	CN 432 Process Dynamics		**Hum.-Soc. Elective	5
		& Control	5		
		**Hum.-Soc. Elective	5		

Total — 208 quarter hours

*May be taken in any sequence.

**See page 146 for the selection of Humanistic-Social Electives. Six hours of Advanced ROTC may be substituted for six hours of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

CH 409 Physical Chemistry	5	CN 450 Special Topics in Chem.	
CH 415 Polymer Technology	4	Engineering	TBA
CN 440 Nuclear Engineering	5	CN 460 Intr. to Plastics	3
		CN 475 Kinetics and Transformations	3

Department of Civil Engineering

Civil Engineering is an extremely broad professional field. The areas of interest may range from the behavior of thin shell structures to traffic flow theory, from hydraulics to the utilization of computers, from earth physics to microbiology, from the psychology of automobile driver behavior to water resources. Civil engineering problems involve the physical, mathematical, life, earth, social, political, communications, and engineering sciences. Civil engineering projects involve many other professional areas, including architecture, law, public health, economics, management, sociology, finance, and other branches of engineering. The scope and complexity of the field, and its degree of involvement with other fields, has increased rapidly with the development of modern science and technology and with the growth of population and national economies.

The Civil Engineering curriculum provides a background in mathematics and the physical sciences, in humanistic-social studies, and in the engineering sciences and the interrelated subdisciplines of civil engineering. Technical electives permit the undergraduate limited specialization in an area of civil engineering such as transportation, environmental, hydraulics, soils, construction, or structural engineering.

The civil engineer plays an essential role in the realization of some of the most basic goals, objectives, and needs of society. These relate to man's need for shelter, mobility, water, air, and productive land — the environment in which he lives and works.

Curriculum in Civil Engineering (CE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

SOPHOMORE YEAR

First Quarter

MH 264 An. Geom. & Calc.	5
ME 205 Statics	4
ME 202 Mtls. Science	3
PS 221 General Physics II	4
CE 200 Intr. To Civil Engr.	1
Basic ROTC	1

Second Quarter

MH 265 Diff. Equations	3
HY 102 World History	3
CE 202 Intr. to Computer Methods in Civil Engineering	3
CE 201 Surveying	5
PS 222 General Physics III	4
Basic ROTC	1

Third Quarter

EC 200 Economics	5
HY 103 World History	3
ME 321 Dynamics I	4
CE 301 Transform Methods in Engineering Analysis	5
Basic ROTC	1

JUNIOR YEAR

EE 262 Circuits	3
ME 207 Streng. of Mat'ls I	3
CE 320 Fund's of Transp. Engr.	5
ME 301 Thermodynamics I	4
PS 320 Mod. Physics for Engrs.	3

ME 340 Fluid Mechanics I	3
EE 273 Elec. Devices	3
CE 304 Theo. of Struc. I	5
IE 211 Engr. Statistics I	3
CE 314 Photogeology	5

CE 380 Theo. of Struc. II	5
CE 308 Hydraulics	5
*Hum.-Soc. Elective	3
CE 418 Soil Mechanics	5

SENIOR YEAR

CE 404 Structural Analysis	4
CE 305 Water Supply and Disposal	5
Tech. Elective	7
*Hum.-Soc. Elective	3

CE 488 Civil Engr. Design I	3
CE 405 Water and Waste Treatment	4
CE 408 Engr. F'dations	3
Tech. Elective	6

CE 489 Civil Engr. Design II	5
*Hum.-Soc. Elective	9

Total — 210 quarter hours

*See page 146 for the selection of Humanistic-Social Electives.

Six hours of Advanced ROTC may be substituted for six hours of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

CE 400 Advanced Surveying and Mapping	5
CE 407 Municipal Engineering I	3
CE 409 Environmental Health Engineering	5
CE 410 Transportation Engineering	5
CE 411 Flow in Open Channels	5
CE 412 Hydrology	5
CE 413 Hydraulic Structures	5
CE 414 Structural Steel	4
CE 415 Construction Planning	5
CE 416 Reinforced Concrete and Prestressed Concrete	5
CE 419 Municipal Engineering II	3
CE 420 Sanitary Engineering Laboratory	5
CE 421 Water Resources Engineering	5
CE 423 Similitude in Engineering	3
CE 424 Air Pollution	3
CE 425 Soil Stabilization	3
CE 490 Special Problems	5
CE 492 Linear Optimization Methods	5

CE 493 Discrete Optimization Methods	5
CN 430 Analog Computation	2
CN 440 Nuclear Engineering	5
EE 381 Electromagnetic Devices	4
EE 446 Analog Computers	3
ME 304 Engineering Materials Science — Properties	3
ME 322 Dynamics II	4
ME 335 Engineering Materials Science — Physical Metallurgy	4
MH 403 Engineering Mathematics II	5
MH 405 Matrix Theory and Applications	5
MH 406 Elementary Partial Differential Equations	5
MH 460 Intr. to Numerical Analysis	5
MH 461 Numerical Matrix Analysis	5
PS 401 Theoretical Physics I — Mechanics	5
PS 402 Theoretical Physics II — Mechanics	5
PS 405 Nuclear Physics	5

Department of Electrical Engineering

The curriculum in Electrical Engineering keeps pace with significant developments in science and technology; provides an educational preparation that assures maximum rate of progress in the engineering profession; and does this within the framework of a sound and extensive humanistic social program.

The Electrical Engineering curriculum is organized around four basic areas of study. These areas provide a firm background in the basic concepts required for all Electrical Engineering students. They are (1) Circuit Analysis, (2) Electronics and Communication, (3) Energy Conversion and Transmission, and (4) Electromagnetic Fields. Courses in automatic control and logic and computing systems are also required. In addition, the senior year of the curriculum is arranged so that a student, through his choice of technical electives, can concentrate on topics of individual interest. Included in these specialized topics are closed-loop control systems, analog and digital computers, generation and transmission of electrical power, advanced communications systems, solid state electronics, and network synthesis.

Many required courses have associated laboratories, in order to keep the student in maximum contact with the realities of the practice of engineering.

Curriculum in Electrical Engineering (EE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

SOPHOMORE YEAR

First Quarter

MH 264	An. Geom. & Cal.	5
PS 221	General Phys. II	4
HY 102	World History	3
ME 202	Eng. Maths. Sc.— structures	3
IE 205	Comp. & Info. Sys.	3
Basic ROTC		1

Second Quarter

MH 265	Linear Diff. Eq.	3
PS 222	General Phys. III	4
HY 103	World History	3
ME 205	Appl. Mech.—Statics	4
EE 262	Circuits	3
Basic ROTC		1

Third Quarter

MH 362	Engr. Math. I	3
IE 211	Engr. Statistics I	3
EE 273	Electronic Devices	3
ME 321	Dynamics I	4
	*Hum.-Soc. Elective	3
Basic ROTC		1

JUNIOR YEAR

EE 361	Network Analysis	5
EE 381	Electromag. Devices	4
EE 391	Electromag. I	4
ME 301	Thermodynamics I	4

EE 362	Linear Systems	5
EE 372	Electronics I	4
EE 392	Electromag. II	4
EE 322	Logic & Computing Systems	3
	*Hum.-Soc. Elective	3

EE 375	Electronics II	5
EE 383	Electromech. Energy Conversion	4
EE 393	Electromag. III	5
	Engr. Science Elective	3

SENIOR YEAR

EE 471	Comm. Theory	5
PS 320	Mod. Phy. for Engr.	3
	Engr. Science Elective	3
	Tech. Elective	3
	*Hum.-Soc. Elective	3

EE 412	Elect. Prop. of Matl.	3
EE 452	Auto Feedback Control Sys.	5
	Tech. Elective	3
	*Hum.-Soc. Electives	6

EE 413	Phys. Electronics	3
	Tech. Elective	3
	*Hum.-Soc. Electives	6
	†Free Electives	6

Total — 210 quarter hours

†Six hours of Advanced ROTC may be substituted for the six hours of Free Electives.

*See page 146 for the selection of Humanistic-Social Electives.

SUGGESTED ENGINEERING SCIENCE ELECTIVES

In addition to the courses listed below, other subjects may be used as engineering science electives upon approval of the Head of the Department.

EE 324	Digital Systems	3
EE 424	Computer Applications in Electrical Engineering	3
EE 425	Computer Organization	3
EE 446	Analog Computers	3
IE 305	Information Decision Systems	3
ME 207	Strength of Materials I	3
ME 340	Fluid Mechanics I	3

SUGGESTED TECHNICAL ELECTIVES

In addition to the courses listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

EE 324 Digital Systems	3	IE 325-6 Engineering Economics Analysis I-II	3-3
EE 424 Computer Applications in Electrical Engineering	3	IE 416-7 Operations Analysis III-IV	3-3
EE 425 Computer Organization	3	ME 207 Strength of Materials I	3
EE 446 Analog Computers	3	ME 340 Fluid Mechanics I	3
EE 447 Magnetic Devices	3	ME 401 Statistical Thermodynamics	3
EE 454 Introduction to Modern Control Theory	3	ME 402 Intr. to Optimal Systems	3
EE 455 Automatic Control Instrumentation	3	ME 421 Heat Transfer	4
EE 464 Intr. Network Synthesis	3	ME 422 Transport Phenomena	3
EE 465 Advanced Circuit Analysis	3	MH 220-1-2 Intr. to Analysis I-II-III	5-5-5
EE 473 Communication Systems	3	MH 266 Topics in Linear Algebra	3
EE 474 Solid State Electronics	3	MH 401 The Calculus of Vector Functions	3
EE 485 Power Systems Engineering	4	MH 403 Engineering Mathematics II	5
EE 486 Direct Energy Conversion	3	MH 405 Matrix Theory and Applications	5
EE 494 Electromagnetic Propagation	3	MH 460 Introduction to Numerical Analysis	5
EE 495 Microwaves	3	MH 461 Numerical Matrix Analysis	5
EE 496 Antennas	3	PS 305 Intr. to Modern Physics	5
IE 312-3 Engineering Statistics I-II	3-3	PS 401-2-3 Theoretical Physics I-II-III	5-5-5
IE 314-5 Operations Analysis I-II	3-3	PS 404 Thermodynamics	5
		PS 415 Intr. to Quantum Mechanics	5
		PS 435 Intr. to Solid State Physics	5

Department of Industrial Engineering

The curriculum in Industrial Engineering prepares one for employment in the design, operation, and control of systems involving men, machines, and materials. Emphasis is placed upon those areas of academic education which are fundamental and pertinent to production and manufacturing; however, the factfinding and analysis approach of Industrial Engineering is applicable to almost any business or service enterprise.

To provide the scientific base required for Industrial Engineering, the student takes sequences of courses in mathematics, physics, chemistry, and engineering science. Part of the engineering science courses are offered through an elective-option arrangement. This base is utilized and reinforced by additional quantitative courses such as engineering statistics, computer programming, linear programming, simulation, and operations research. The economic and human aspects of Industrial Engineering are also recognized through appropriate subjects. Application of this fundamental knowledge is made in courses such as production control, budget control, and operations and facilities design.

The philosophy of the Department of Industrial Engineering is to train the student to recognize and solve industrial problems with the most efficient tools available. To the extent possible, this curriculum provides and demonstrates by application the fundamental principles and techniques of Industrial Engineering.

Curriculum in Industrial Engineering (IE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

SOPHOMORE YEAR

First Quarter		Second Quarter		Third Quarter	
MH 264 An. Geom. & Cal.	5	PS 222 Gen. Physics III	4	ACF 215 Gen. & Cost Acc.	5
PS 221 Gen. Physics II	4	MH 265 Diff. Equations	5	IE 205 Com. & Info. Sys.	5
HY 102 World History	3	HY 103 World History	3	IE 211 Engr. Stat. I	3
IE 202 Ind. Processes	3	ME 202 EMS-Structure	3	ME 321 App. Mch. Dynam.	4
Basic ROTC	1	ME 205 App. Mech. Stat.	4	EE 262 Circuits	3
		Basic ROTC	1	Basic ROTC	1

First Quarter			JUNIOR YEAR			Third Quarter		
ME 207	Stren. of Mat. I	3	IE 305	Info-Decis. Sys.	3	IE 326	Eng. Eco. Anal. II	3
PG 211	Gen. Psychology	3	IE 313	Engr. Stat. II	3	EE 381	Elec. Devices	4
IE 312	Engr. Stat. II	3	IE 314	Oper. Anal. I	3	IE 315	Oper. Anal. II	3
IE 325	Engr. Eco. Anal. I	3	MH 266	Linear Algebra	3	IE 318	Work Design I	3
EE 273	Elec. Devices	3	PG 321	Exp. Psych. II: Perception	4	IE 363	Man-Mach. Sys. I	3
	*Hum.-Soc. Elective	3		*Hum.-Soc. Elective	3		†Engr. Sci. Elective	3
			SENIOR YEAR					
ME 301	Thermodynam. I	4	IE 417	Oper. Anal. IV	3	PS 320	Modern Physics	3
IE 414	Engr. Stat. II	3	IE 424	Prod. Cont. Fund.	3	IE 428	Oper. & Fac. Des. II	3
IE 416	Oper. Anal. III	3	IE 427	Oper. & Fac. Des. I	3	IE 429	Op. Cont. Sys. Des.	3
IE 419	Work Design II	3		†Engr. Sci. Elective	5		†Engr. Sci. Elective	3
IE 426	Ind. Bud. Cont.	3		*Hum.-Soc. Elective	3		*Hum.-Soc. Elective	3

Total — 208 quarter hours

*See page 146 for the selection of Humanistic-Social Electives. Six hours of Advanced ROTC may be substituted for six hours of Humanistic-Social Electives.

†An Engineering Science Elective Sequence must be selected from a list of such sequences which is available in the Office of the Department Head. Of this, one course may be selected from junior or senior level Industrial Engineering, Mathematics or Physics courses with Department Head approval.

Department of Mechanical Engineering

Students who complete the curriculum in Mechanical Engineering have a broad field from which to select their life's work. Industrial positions in manufacturing, marketing, maintenance, and design are available to graduate mechanical engineers in a large variety of companies which produce mechanical, chemical, electrical, aerospace, nautical, and petroleum products. In addition, the graduate is prepared by his college training, when supplemented by experience and practical training, to specialize in management or in engineering services, such as consulting and sales. The curriculum also is suitable for students intending to enter the fields of engineering education and research. It is an excellent base for further study at the graduate level in this and allied fields.

The curriculum provides the student with a strong background in mathematics and the physical sciences. The basic engineering science fields of engineering mechanics, materials science, thermodynamics, fluid mechanics, and heat and mass transfer are covered in depth to provide the student with understanding and with the ability to solve problems in these areas. In addition, professional training is given in combustion engines, including gas turbines and rockets, power plants, air conditioning, refrigeration, automatic controls, turbomachinery and machine design. A series of courses in electrical theory and electronics is also included to equip the graduate with needed fundamental knowledge in this rapidly expanding field.

Modern design courses at senior level, employing both the case study and the individual project techniques, provide an opportunity for the student to solve typical engineering problems, requiring the development of skill and co-operation in creative design and optimization and in the use of analysis and synthesis.

Humanistic-social subjects are required to give the student breadth and to add to his general education.

Technical electives are provided in the senior year of the curriculum to enable students to specialize to a limited extent. Students intending to undertake graduate studies may take additional mathematics in lieu of certain professional technical electives.

Curriculum in Mechanical Engineering (ME)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

First Quarter

PS 221 General Physics II	4
MH 264 An. Geom. & Cal.	5
ME 205 Applied Mechanics— Statics	4
HY 102 World History	3
Basic ROTC	1

SOPHOMORE YEAR

Second Quarter

ME 202 Engr. Materials Science—Structure	3
ME 207 Strength of Materials I	3
PS 222 General Physics III	4
MH 103 World History	3
MH 265 Linear Differential Equations	3
ME 210 Engineering Method	1
Basic ROTC	1

Third Quarter

EE 262 Circuits	3
ME 316 Strength of Materials II	4
ME 321 Dynamics I	4
ME 308 Computation Lab.	2
MH 266 Topics in Linear Algebra	3
ME 309 Materials Testing Laboratory	1
Basic ROTC	1

JUNIOR YEAR

ME 322 Dynamics II	4
ME 301 Thermodynamics I	4
MH 362 Engr. Math I	3
EE 275 Electronic Devices	3
SP 202 App. Oral Comm.	3

ME 304 Engr. Materials Science—Properties	3
ME 302 Thermodynamics II	3
EE 381 Electromag. Dev.	4
ME 340 Fluid Mechanics I	3
ME 323 Dynamics of Machines	4

ME 335 Engr. Materials Science—Metallurgy	4
ME 303 Thermodynamics III	3
PS 320 Modern Physics for Engineers	3
ME 341 Fluid Mechanics II	4
ME 312 Measurements Lab.	3

SENIOR YEAR

ME 421 Heat Transfer	4
ME 439 Mech. Engr. Design I	4
ME 427 Dynamics of Physical Sys.	4
*Hum.-Soc. Elective	3
Technical Elective	3

ME 415 Thermodynamics of Power Systems	4
ME 440 Mech. Engr. Design II	3
ME 422 Transport Processes	3
*Hum.-Soc. Elective	6
Technical Elective	3

ME 451 Advanced Projects	3
ME 420 Thermal Systems Laboratory	2
*Hum.-Soc. Elective	9
Technical Elective	4

Total — 210 quarter hours

*Six hours of Advanced ROTC may be substituted for SP 202 (3 hrs.) and three additional hours approved by the Department Head.

*See page 146 for the selection of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

CE 304 Theory of Structures I	5	ME 428 Air Conditioning and Refrigeration	4
CE 305 Water Supply and Disposal Systems	5	ME 432 Automatic Controls	3
CE 402 Statistically Indeterminate Structures	5	ME 436 Engineering Materials Science— Ferrous Metallurgy	3
CE 404 Reinforced Concrete	4	ME 437 Engineering Materials Science— Non-Ferrous Metallurgy	3
CN 440 Nuclear Engineering	5	ME 438 Residual Stresses in Metals	4
EE 322 Logic and Computing Systems	3	ME 441 Engineering Systems	4
EE 391 Electromagnetics I	4	ME 443 Photoelastic Stress and Strain Analysis	3
IE 315 Operational Analysis II	3	ME 450 Special Problems	1-5
IE 326 Engineering Economic Analysis II	3	MH 401 The Calculus of Vector Functions	3
IL 450 Engineering Metrology	1-5	MH 403 Engineering Mathematics II	5
ME 401 Statistical Thermodynamics	3	PS 413 Intr. to X-Ray Crystallography	5
ME 402 Intr. to Optimal Systems	3		
ME 414 Turbomachines	4		
ME 425 Gas and Steam Turbines	4		

Materials Engineering

The curriculum in Materials Engineering is administered by the Department of Mechanical Engineering of the School of Engineering. It is an interdisciplinary curriculum conducted co-operatively by academic departments of the School of Engineering and the School of Arts and Sciences through a faculty Materials Engineering Curriculum Committee.

Materials Engineering includes both the design of materials and materials processes to meet specific needs. Materials Engineers are employed in the basic metallurgical, ceramics, plastics, electronics, aerospace, mechanical, process,

chemical, and nuclear power industries. The profession of Materials Engineering is a modern out-growth of the older professions of metallurgical, ceramic, and plastics engineering. It represents a unification of basic principles and experience in materials design to meet the expanding current needs for industrial materials. Every aspect of industrial and technological progress depends upon proper materials design and application.

The curriculum in Materials Engineering is planned to provide the necessary foundation in the humanities, basic sciences, engineering sciences, and particularly in the science of the relationship of structure to properties. The curriculum will prepare the engineer for professional practice or graduate study. Today, many materials engineers occupy key positions in industry, government, research and education.

The courses in Materials Engineering include the subjects of ceramic, metallic, and plastic materials design with the emphasis placed upon the structure of each type and its influence on the properties and performance in service. Fundamental relationships are emphasized to prepare the engineer to effectively meet modern design challenges that will be encountered. The equipment available is comprehensive and modern and includes metallurgical microscopes, X-ray diffraction and radiographic facilities, an electron microscope, and a variety of types of chemical and mechanical processing and testing machines.

Curriculum in Materials Engineering (MTL)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

SOPHOMORE YEAR

First Quarter		Second Quarter		Third Quarter	
MH 264	An. Geom. & Cal. — 5	MH 265	Linear Differential Equations — 3	MH 266	Topics in Linear Algebra — 3
PS 221	Gen. Physics II — 4	PS 222	Gen. Physics III — 4	CH 407	Physical Chem. — 5
ME 205	Applied Mechanics—Statics — 4	ME 202	Engr. Materials Science—Structure — 3	ME 304	Engr. Materials Science—Properties — 3
HY 102	World History — 3	ME 207	Strength of Materials I — 3	ME 321	Dynamics I — 4
Basic ROTC	— 1	HY 103	World History — 3	ME 309	Materials Testing Laboratory — 1
		Basic ROTC	— 1	Basic ROTC	— 1

JUNIOR YEAR

CH 408	Physical Chem. — 5	ME 301	Thermodynamics I — 4	ME 421	Heat Transfer — 4
ME 335	Engr. Materials Science—Physical Metallurgy — 4	ME 336	Physical Analysis of Materials I — 4	ME 338	Phase Diagrams — 4
CN 460	Intr. to Plastics — 3	ME 486	Engr. Materials Science—Ferrous Metallurgy — 3	ME 437	Engr. Materials Science—Non-ferrous Metallurgy — 3
ME 308	Computation Lab. — 2	ME 312	Measurements Lab. — 3	EE 262	Circuits — 3
*Hum.-Soc. Elective	— 3	*Hum.-Soc. Elective	— 3	Technical Elective	— 3

SENIOR YEAR

PS 320	Modern Physics for Engineers — 3	PS 413	Intr. to X-Ray Crystallography — 5	ME 446	Advanced Physical Metallurgy—Theoretical — 3
CH 415	Polymer Tech. — 4	CN 475	Rate Processes in Materials — 3	ME 451	Advanced Proj. — 3
ME 448	Intr. to Ceramics — 3	EE 381	Electromagnetic Devices — 4	Technical Elective	— 5
EE 273	Electronic Devices — 3	+SP 202	App. Oral Comm. — 3	*Hum.-Soc. Elective	— 6
*Hum.-Soc. Elective	— 5	Technical Elective	— 3		

Total — 206 quarter hours

+Six hours of Advanced ROTC may be substituted for SP 202 (3 hrs.) and three additional hours approved by the Department Head.

*See page 146 for the selection of Humanistic-Social Electives.

NOTE: The sequence CH 111 and CH 112 may be substituted for the sequence CH 103/CH 103L and CH 104/CH 104L.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

CH 207 Organic Chemistry	5	PS 300 Intermediate Electricity and Magnetism I	5
CH 410 Intermediate Inorganic Chemistry	5	PS 303 Optics	5
EE 412 Electrical Properties of Materials	3	PS 304 Applied Spectroscopy	5
EE 413 Physical Electronics	3	PS 414 Electron Optics and Microscopy	5
GE 301 Mineralogy I	5	PS 415 Intermediate Modern Physics I	5
ME 337 Physical Analysis of Materials II	4	PS 435 Intr. to Solid State Physics	5
ME 438 Residual Stresses in Metals	3	TE 305 Fiber Technology	3
ME 443 Photoelastic Stress & Strain Analysis	3	TE 424 Man-Made Fibers I	5
ME 447 Advanced Physical Metallurgy—Plasticity	4		

Department of Textile Engineering

The Department of Textile Engineering is equipped with full-size machinery of a complete textile mill for the manufacture of a wide variety of fabrics from the processing of the raw material to the weaving of the finished product. Included are laboratories for bleaching, dyeing, finishing, and the physical and chemical testing of fibers and fabrics.

The textile industry is the largest industry in Alabama, comprising more than 25 per cent of the total industrial working force in the State. The greater portion of the textile industry, making yarn on the cotton system, is located in the South and Southeast. In the Southern Region alone, there are some 1500 plants which process cotton, rayon, nylon, wool, and paper and an almost unlimited number of finished products. The industry is growing rapidly in all branches.

The size and diversity of the textile and allied industries, including manufacturers of textile machinery and equipment, chemicals and dyestuffs, research laboratories, textile supply and sales houses, afford unusual opportunities for college-trained men and women. New fields of employment are opening in research and development and in the process of new fibers. The need for college graduates in textile engineering has never been greater than at the present time, nor is the demand likely to be met within the next several years.

The Department of Textile Engineering offers three curricula to prepare students for all areas of the industry. The Textile courses in these curricula are combined with courses offered by other departments of the University to provide basic instruction in the fundamental sciences, engineering, technology and humanistic-social studies. The three curricula are:

Textile Engineering. — The curriculum in Textile Engineering trains men and women in the basic engineering sciences. It includes basic engineering sciences, humanistic-social studies, and textile subjects needed for a basic understanding of the textile industry. It prepares students for graduate study and careers in textile research, engineering, production and management in the textile industry as well as in other allied industries, such as the manufacture of textile machinery and man-made fibers.

Textile Chemistry. — The curriculum in Textile Chemistry trains students in the chemistry of natural and man-made fibers and in the theory and practice of textile dyeing and finishing. It prepares students for graduate work and careers as chemists and dyers in the textile, man-made fibers, dyestuff and other allied industries.

Textile Management. — The curriculum in Textile Management prepares the student for production, administrative and managerial positions in the

textile and allied industries. Emphasis is placed on production and operational functions and the humanistic-social studies with the inclusion of textile subjects. Students are permitted in their junior and senior years to major in production, sales, or design according to their interests and professional needs.

The Alabama textile industry cooperates with the Department of Textile Engineering by assisting worthy young men and women to obtain a college education through the Co-operative Education Program, which is described on page 44 of this catalog.

The Department of Textile Engineering is organized and equipped to conduct applied and fundamental research. In cooperation with the Auburn Research Foundation, the Engineering Experiment Station, and other departments of the University, the department serves the textile industry of the region through the full utilization of its facilities.

Curriculum in Textile Engineering (TE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 146)

SOPHOMORE YEAR

First Quarter	Second Quarter	Third Quarter
TE 210 Fiber Process 5	TE 101 Intr. Textiles 1	TE 220 Weav. & Des. I 5
MH 264 An. Geom. & Cal. 5	MH 265 Linear Dif. Eq. 3	ME 205 App. Mech. Statics 4
HY 102 World History 3	HY 103 World History 3	ME 202 EMS-Structures 3
PS 221 Gen. Physics II 4	PS 222 Gen. Phys. III 4	+SP 202 App. Oral Comm. 3
Basic ROTC 1	TE 211 Yarn Mfg. I 5	Basic ROTC 1
	Basic ROTC 1	

JUNIOR YEAR

ME 207 Stren. Mtrls. I 3	ME 321 Dynamics I 4	ME 340 Fluid Mech. I 3
EE 262 Circuits 3	EE 273 Elec. Devices 3	EE 381 Elec. Mag. D. 4
TE 307 Bleach. & Dyeing 5	TE 320 Weav. & Des. II 5	TE 324 Phy. Testing 3
TE 325 Text. Qual. Cont. 2	PS 320 Mod. Phys./Engrs. 3	TE 319 Chem. Testing 2
ME 301 Thermodynamics I 4	IE 201 Ind. Admin. 3	IE 205 Com. & Info. Sys. 3

SENIOR YEAR

TE 405 Warp Prepara. 5	TE 406 Text. Costing 5	TE 431 Fabric Analysis 3
+EH 304 Tech. Writing 3	TE 305 Fiber Technology 3	TE 412 Text. Mgt. 3
EC 200 Gen. Economics 5	PG 211 Gen. Psychology 3	TE 424 Man-Made Fibers 5
*Hum.-Soc. Elective 5	Technical Elective 5	*Hum.-Soc. Elective 3
		Technical Elective 5

Total — 205 quarter hours

†Six hours of Advanced ROTC may be substituted for SP 202 (3 hrs.) and EH 304 (3 hrs.).

*See page 146 for the selection of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

MN 341 Business Law 5	IL 308 Gages & Measurements 5
EC 402 American Industries 5	TE 321 Weaving & Design III 5
IE 301 Electronic Data Proc. 5	TE 322 Yarn Manufacturing II 5
IE 310 Motion & Time Study 5	TE 425 Man-Made Fibers II 5
IE 320 Engineering Economy 5	

Curriculum in Textile Chemistry (TC)

FRESHMAN YEAR

First Quarter	Second Quarter	Third Quarter
CH 111 Gen. Chem. 5	CH 112 Gen. Chem. 5	CH 113 Gen. Chem. 5
EH 101 English Comp. 3	EH 102 English Comp. 3	EH 103 English Comp. 3
MH 160 Algebra & Trig. 5	MH 161 An. Geom. & Cal. 5	MH 162 An. Geom. & Cal. 5
LY 101 Use of Library 1	HY 101 World History 3	HY 102 World History 3
TE 101 Intr. Textiles 1	Basic ROTC 1	Basic ROTC 1
Basic ROTC 1	PE Physical Education 1	PE Physical Education 1
PE Physical Education 1		

SOPHOMORE YEAR

First Quarter

CH 204 An. Chem.	3
CH 204L An. Chem. Lab.	2
MH 163 An. Geom. & Cal.	5
HY 103 World History	3
+SP 202 Oral Communica.	3
Basic ROTC	1

Second Quarter

CH 205 An. Chem.	5
MH 264 An. Geom. & Cal.	5
TE 220 Weav. & Des. I	5
Basic ROTC	1

Third Quarter

PO 209 Intr. Am. Govt.	5
PA 202 Ethics & Soc.	5
TE 210 Fiber Process	5
TE 305 Fiber Tech.	3
Basic ROTC	1

JUNIOR YEAR

PS 205 Intr. Physics	5
TE 320 Weav. & Des. II	5
+EH 304 Technical Writ.	3
PG 211 Gen. Psychology	3

PS 206 Intr. Physics	5
TE 307 Bleach. & Dyeing	5
TE 211 Yarn Mfg. I	5
*Hum.-Soc. Elective	3

CH 303 Organic Chem.	5
TE 317 Dyeing & Finish.	5
TE 319 Chem. Testing	2
Technical Elective	5

SENIOR YEAR

CH 304 Organic Chem.	5
TE 405 Warp Preparation	5
TE 412 Textile Mgt.	3
TE 324 Phys. Testing	3

CH 407 Physical Chem.	5
TE 417 Adv. Dyeing	5
TE 424 Man-Made Fibers	5
Technical Elective	3

CH 408 Physical Chem.	5
TE 406 Textile Costing	5
Technical Elective	5

Total — 205 quarter hours

†Six hours of Advanced ROTC may be substituted for SP 202 (3 hrs.) and EH 304 (3 hrs.).

*See page 146 for the selection of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

CH 305 Organic Chemistry	5	ME 301 Thermodynamics I	4
CH 404 Organic An. (Qual.)	5	MH 265 Diff. Equa.	3
CN 432 Proc. Dyn. & Control	5	TE 321 Weav. & Des. III	5
CN 460 Intr. to Plastics	3	TE 322 Yarn Mfg. II	5
IE 204 Computer Program	3	TE 418 Jacqu. Weav. & Des.	2
IE 211 Engr. Statistics I	3	TE 425 Man-Made Fibers II	5
IE 320 Engineering Economy	5	TE 431 Fabric Analysis	3
ME 207 Stren. of Mat. I	3		

Curriculum in Textile Management (TM)

FRESHMAN YEAR

First Quarter

EH 101 English Comp.	3
HY 101 World History	3
MH 160 Intr. Col. Math.	5
TE 101 Intr. Textiles	1
EG 102 Engr. Drawing	2
Basic ROTC	1
PE Physical Education	1

Second Quarter

EH 102 English Comp.	3
HY 102 World History	3
MH 161 An. Geom. & Cal.	5
PA 202 Ethics & Soc.	5
Basic ROTC	1
PE Physical Education	1

Third Quarter

EH 103 English Comp.	3
HY 103 World History	3
CH 201 Chem. Science	5
PG 211 Intr. Psy. I	3
IL 103 Mach. Tool Lab.	1
Basic ROTC	1
PE Physical Education	1

SOPHOMORE YEAR

EC 200 Gen. Economics	5
IE 201 Ind. Admin.	3
TE 210 Fiber Process	5
TE 305 Fiber Technology	3
Basic ROTC	1

EC 202 Economics II	5
PS 204 Survey Physics	5
TE 220 Weav. & Design	5
Basic ROTC	1

ACF 215 Fund. Acctng.	5
PO 209 Intr. Am. Govt.	5
TE 211 Yarn Mfg. I	5
Basic ROTC	1

JUNIOR YEAR

EC 274 Bus. & Eco. Stat. I	5
TE 307 Bleach. & Dyeing	5
TE 322 Yarn Mfg. II	5
TE 319 Chem. Testing	2

IE 301 El. Data Proc.	5
TE 320 Weav. & Des. II	5
TE 324 Phys. Testing	3
+EH 304 Technical Writ.	3

MT 331 Marketing	5
TE 317 Dyeing & Finish.	5
TE 321 Weav. & Des. III	5
TE 325 Tex. Qual. Cont.	2

SENIOR YEAR

EC 445 Indus. Relat.	5
+SP 202 Oral Communica.	3
TE 406 Text. Costing	5
Technical Elective	5

MN 442 Personnel Mgt.	5
TE 405 Warp Prepara.	5
Technical Elective	5
*Hum.-Soc. Elective	3

TE 424 Man-Made Fibers	5
TE 412 Textile Mgt.	3
TE 431 Fabric Analysis	3
TE 418 Jacqu. Weav. & Des.	2
Technical Elective	5

Total — 204 quarter hours

†Six hours of Advanced ROTC may be substituted for SP 202 (3 hrs.) and EH 304 (3 hrs.).

*See page 146 for the selection of Humanistic-Social Electives.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department.

ACF 212 Principles of Acctng.	5	IE 310 Motion and Time Study	5
MN 341 Business Law	5	IE 320 Engineering Economy	5
ACF 361 Principles of Bus. Finance	5	IL 308 Gages and Measurements	5
MN 480 Bus. Pol. & Admin.	5	PG 461 Industrial Psychology	5
HE 415 History of Textiles	5	TE 417 Advanced Dyeing	5
IE 302 Prod. Cont. Techniques	3	TE 425 Man-Made Fibers II	5

School of Home Economics

NORMA H. COMPTON, *Dean*

HOME ECONOMICS at Auburn University is a professional program with its roots in the arts, sciences and humanities. Areas of specialization are concerned with all aspects of environment, health and human development. Home Economics is a complex of studies serving many purposes — broad liberal education for the unknown future, preparation for professional careers, and a background for home and family living. A basic core of subjects in liberal education is required of all undergraduate majors. All courses are open to both men and women students.

With emphasis on both breadth of knowledge and its application to the solution of human problems, Home Economics offers professional or pre-professional preparation for an increasing variety of positions. The Home Economics degree enables graduates to earn above-average salaries. Numerous positions of leadership are offered to majors in education, business, industry, and government.

Programs

Programs of study leading to the Bachelor of Science degree can be planned within nine curricula in the School of Home Economics. These curricula are designed with flexibility to meet the needs of students with varying interests.

Each student is assigned a faculty adviser under whose guidance a program is planned.

The School of Home Economics includes the Departments of Consumer Affairs, Family and Child Development, and Nutrition and Foods.

Department of Consumer Affairs

The Department of Consumer Affairs focuses on man's physical environment and resources, including his personal interaction with this environment. The housing in which he lives, the home furnishings and equipment surrounding him, the clothes he wears, and the beauty in his environment are all matters of fundamental concern.

Three majors are currently offered in this department: Clothing, Textiles and Related Art; Fashion Merchandising; Housing, Interior Furnishings, and Equipment. Students are trained to apply science and technology in evaluating consumer products. This training, in addition to providing better consumers, leads to careers for men and women in business or government positions serving consumers in fields such as fashion merchandising, textile design, textile science, and public utilities.

Clothing, Textiles and Related Art (CT)

Clothing, Textiles, and Related Art is a professional option curriculum (consisting of three options), providing flexibility for preparation in specific areas of specialization based on students' professional goals. Diversification within the major allows for application of knowledge in such varied fields as textile and apparel design, production and promotion; textile science; fashion journalism; consumer problems; and individual creativity. A unique interdisciplinary potential is created by the existence on one campus — located within a textile area — of Clothing and Textiles, Textile Engineering, the Experiment Station for research and the Cooperative Extension Service for consumer application.

Curriculum in Clothing, Textiles and Related Art (CT)

Options: Clothing, Textile Design, Textile Science

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101	Eng. Comp. 3	EH 102	Eng. Comp. 3	EH 103	Eng. Comp. 3
HY 101	World History 3	HY 102	World History 3	HY 103	World History 3
MH 159	Precalculus 3	CH 103	Gen. Chem. 4	CH 104	Gen. Chem. 4
CA 116	Art for Everyday 5	CH 103L	Gen. Chem. Lab. 1	CH 104L	Gen. Chem. Lab. 1
	Living I 3	CA 115	Clothing & Man. 3	CA 105	Fund. of Clo. 5
FCD 110	Contemp. Home Economics 1	LY 101	Use of Library 1	PE	Physical Education 1
PE	Physical Education 1	PE	Physical Education 1		

SOPHOMORE YEAR

EH 253	Eng. Lit. 3	EH 254	Eng. Lit. 3	SY 201	Sociology 5
PG 211	Psych. I 3	NF 119	Nutr. & Man. 3	VM 210	Human Physio. 5
EC 200	Economics I 3	CA 225	Textiles 5	SP 202	App. Oral Comm. 3
FCD 117	Fam. & Human Dev. 3	CA 113	Housing for Man 3		Elective 5
	Prof. Elective 4		Prof. Elective 5		

JUNIOR YEAR

PS 204 or 205	Physics 5	VM 311	Bacteriology 5	CA 345	Creative Crafts or
IM 315	Ag. Journalism 3	FCD 323	Management for Living 3	CA 385	Creative Weaving 3
	Prof. Electives 5		Elective 5		Prof. Electives 15
		CA 313	Home Furnishings 5		

SENIOR YEAR

Professional Electives 10	CA 415	History of Textiles or	CA 451	Man-Environment Relations 2
Electives 8	CA 425	History of Cost 5		Electives 15
		Prof. Electives 13		

Total — 210 quarter hours

CLOTHING OPTION - APPROVED PROFESSIONAL ELECTIVES

CA 205	Family Clothing 3	CA 490	Independent or Field Study 5
CA 206	Garment Structures 3	PA 325	Aesthetics 5
CA 216	Art for Everyday Liv. II 3	PG 330	Social Psychology 4
CA 226	Fashion Sketching 5	PG 461	Industrial Psychology 5
CA 310	Mass Commun., Fam.-Cons. Serv. 3	SY 203	Cultural Anthropology 5
CA 316	Fashion Analysis 5	SY 305	Culture & Personality 3
CA 393	Clothing Design 5	SY 311	Technology & Social Change 5
CA 405	Costume Draping 5	JM 221	Beginning Newsriting 5
CA 455	Flat Pattern Des. 5	IM 421	Photo-Journalism 5
CA 456	Comp. Meth. Apparel Prod. 5		

TEXTILE DESIGN OPTION - APPROVED PROFESSIONAL ELECTIVES

CA 216	Art for Everyday Liv. II 5	CA 477	Adv. Fabric Design 3
CA 205	Family Clothing 3	TE 418	Jacquard Weaving & Design 2
CA 486	Rug Weaving 3	CA 415	Hist. of Textiles 5
CA 487	Adv. Pattern Weaving 3	CA 435	Textile Testing 5
CA 475	Creative Textile Design 3	CA 490	Independent or Field Study 5
CA 476	Textile Printing 3		

Other Suggested Electives

CA 473 Contemporary Home Furnishings	5	CA 395 Clothing Design	5
CA 303 The House	5	CA 343 Interior Home Problems	5
CA 425 Hist. of Costume	5		

TEXTILE SCIENCE OPTION - APPROVED PROFESSIONAL ELECTIVES

(Minimum of 78 hours to be selected from the following courses)

CA 435 Textile Testing	5	TE 417 Advanced Dyeing	5
CA 475 Creative Textile Design	3	TE 424 Man-Made Fibers I	5
CA 483 Laundry Equip. & Care of Textiles	5	TE 425 Man-Made Fibers II	5
CA 490 Independent or Field Study	5	CH 203 Organic Chem.	5
TE 305 Fiber Tech.	3	CH 207 Organic Chem.	5
TE 307 Bleaching & Dyeing	5	CH 208 Organic Chem.	5
TE 317 Dyeing & Finishing	5	PS 205 Intro. Physics	5
TE 319 Chem. Testing	2	PS 206 Intro. Physics	5
TE 324 Physical Testing	3	BY 401 Statistics	5

Students with other specialized professional goals in Clothing, Textiles and Related Art should plan an appropriate coordinated program of electives to provide needed knowledge and competence.

Students interested in combining Clothing & Textiles with teacher certification, consult adviser for specific course requirements.

All electives must be approved by the student's adviser.

Fashion Merchandising (FM)

Fashion Merchandising prepares majors for such positions as buyer or assistant buyer, comparison shopper, fashion stylist or coordinator, merchandise manager, fashion promoter, or owner-manager of a small store. Three months of retail training is included in the fashion merchandising curriculum.

Curriculum in Fashion Merchandising (FM)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
MH 159 Precalculus Math.	5	CH 103 Chemistry	4	CH 104 Chemistry	4
CA 116 Art for Everyday		CH 103L Chemistry Lab.	1	CH 104L Chemistry Lab.	1
Liv. I	3	CA 115 Clothing & Man	3	NF 119 Nutrition & Man.	3
FCD 110 Contemporary		LY 101 Library Science	1	FCD 257 Fam. & Human	
H. Ec.	1	PE Physical Education	1	Dev.	3
PE Physical Education	1			PE Physical Education	1

SOPHOMORE YEAR

EH 253 English Lit.	3	EC 202 Economics II	5	ACF 211 Accounting	5
EC 200 Economics I	5	CA 225 Textiles	5	PS 204 Physics	5
CA 205 Family Clothing	3	SY 201 Sociology	5	PG 211 Psychology I	3
VM 210 Physiology	5	CA 115 Housing for Man	3	SP 202 App. Oral Comm.	3
				Elective	3

JUNIOR YEAR

MT 331 Marketing	5	CA 325 Retailing	5	CA 335 Retail Training	8
CA 316 Fashion Analysis	5	FCD 323 Mgt. for Modern		Prof. Elective	5
JM 315 Agric. Journalism	3	Liv.	3	IE 301 Elec. Data Processing	5
CA 226 Fash. Sketching	5	VM 311 Bacteriology	5		
		CA 385 Creative Weaving	3		
		Elective	3		

SENIOR YEAR

CA 416 Apparel Quality		MT 432 Advertising	3	MT 435 Mktg. Problems	5
Evaluation	5	CA 425 History of Costume	5	CA 435 Textile Testing	5
CA 483 Eq. & Care of Tex.	5	CA 445 Fash. Merchandising	5	MT 433 Retail Store Mgt.	5
Elective	3	CA 431 Man-Environment		Prof. Elective	3
Prof. Elective	5	Relations	2		

Total — 210 quarter hours

Fashion Institute of Technology One-Year Transfer Program

Selected students in the Clothing, Textile Design, or Fashion Merchandising curricula may apply for a special one year program during their junior year at the Fashion Institute of Technology in New York City. Arrangements

can be made to transfer the FIT credits to Auburn and to receive, in addition, the Associate in Applied Science degree from FIT.

The support received by FIT from the Educational Foundation for the Fashion Industries and its unique location in mid-town Manhattan enable students to see the fashion industry in operation and to have their work evaluated by outstanding designers who lecture, demonstrate, and evaluate the finished products. Students in fashion buying and merchandising also participate in a cooperative work-study program in the fashion industry.

For further information, contact the Head of the Consumer Affairs Department, Auburn University.

Housing, Interior Furnishings, and Equipment (HEQ)

The Housing, Interior Furnishings, and Equipment program prepares students for positions with public utilities, manufacturers, retail dealers, research centers, governmental agencies, retail associations, and other business areas. This curriculum serves and prepares professional homemakers, those engaged in adult education and Cooperative Extension. Courses from this program may be elected by students in other curricula; examples include programs centered on safety education, house structure, engineering and the applications of physics.

Curriculum in Housing, Interior Furnishings, and Equipment (HEQ)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
CA 116 Art for Everyday Liv.	3	CH 103 General Chemistry	4	CH 104 General Chemistry	4
MH 159 Precalculus Math	5	CH 103L Chemistry Lab.	1	CH 104L Chemistry Lab.	1
FCD 110 Contemp. H. E.	1	CA 115 Clothing and Man	3	HY 102 World History	3
NF 119 Nutrition and Man	3	HY 101 World History	3	FCD 257 Family and Human Dev.	3
LY 101 Use of Library	1	CA 113 Housing and Man	3	SP 202 App. Oral Comm.	3
PE	Physical Education 1	PE	Physical Education 1	PE	Physical Education 1

SOPHOMORE YEAR

EH 253 English Lit.	3	EH 254 English Lit.	3	EC 202 Economics II	5
HY 103 World History	3	PG 212 Psychology II	3	CA 233 Home Equipment	5
VM 210 Human Physiology	5	PS 204 Foundations of Physics	5	SY 201 Intr. to Sociology	5
PG 211 Psychology I	3	EC 200 Economics I	5	JM 315 Agri. Journalism	3
CA 225 Textiles	5				

JUNIOR YEAR

CA 303 The House	5	CA 333 Lighting Equipment	3	CA 433 Food Equipment	5
FCD 323 Mgt. for Modern Living	3	VM 311 General Bacteriology	5	Prof. Electives	5
MT 331 Marketing	5	CA 310 Mass Commun. in Family and Cons. Services	3	CA 343 Int. Home Problems	5
CA 313 Home Furn.	5	MT 432 Advertising	5	MT 333 Salesmanship	3

SENIOR YEAR

CA 453 The Cons. and the Mkt.	3	CA 493 House Utility Core	3	CA 483 Laundry Eq. and Care of Textile Articles	5
Prof. Electives	13	FCD 463 Family Economics	5	FCD 443 Home Management	5
		Electives	10	Residence	2
				CA 431 Man-Environ. Rel.	2
				Electives	6

Total — 210 quarter hours

HOUSEHOLD EQUIPMENT OPTION - APPROVED PROFESSIONAL ELECTIVES

NF 102 Food & Nutrition	5	CA 433 Food Equip.	5
NF 202 Meal Management	5	NF 353 Community & Fam. Health	3
CA 423 Eq. & Housing Tech.	5	VM 311 Gen. Bacteriology	5

INTERIOR FURNISHINGS OPTION - APPROVED PROFESSIONAL ELECTIVES

CA 216 Art for Everyday Liv. II	3	CA 445 Fash. Merchandising	5
CA 325 Funda. Retailing	5	CA 473 Contemp. Home Furnishings	3
CA 345 Creative Crafts	3	AR 360 Apprec. of Architecture	3
CA 385 Creative Weaving	3	AR 370 Space for Living	3
CA 415 History of Textiles	5	PA 325 Aesthetics	5

Department of Family and Child Development

The Department of Family and Child Development is concerned with the processes of growth and development of the individual in his daily living from infancy to old age and with the creation of techniques for facilitating such development. Its primary mission is the promotion of self-fulfillment of individuals and families through maximum utilization of material and human resources.

Three majors are offered in this department: Family and Child Development, Home Management and Family Economics, and Family and Child Services.

Family and Child Development (FCD)

The major in Family and Child Development prepares men and women for professional work with families and individuals of all age levels, with challenging careers in programs for young children and youth, family life education and business. Through the course, Internship in Agencies Serving Children, majors are provided supervised job experience related to their area of interest.

Curriculum in Family and Child Development (FLE)

Options: Family Relations, Child Development

FRESHMAN YEAR

First Quarter

EH 101 English Comp.	3
CA 116 Art for Everyday Liv.	3
BI 101 Prin. of Biology	5
NF 119 Nutrition and Man	3
FCD 110 Contemp H. Ec.	1
LY 101 Library Science	1
PE Physical Education	1

Second Quarter

EH 102 English Comp.	3
CA 115 Clothing for Man	3
BI 104 Bio. Human Affairs	5
MH 100 Math. Insights	5
PE Physical Education	1
Electives	1

Third Quarter

EH 103 English Comp.	3
CA 113 Housing for Man	3
FCD 257 Fam. & Human Dev.	3
PG 211 Psychology I	3
PE Physical Education	1
Approved Elective	5

SOPHOMORE YEAR

FCD 207 Prenatal and Infant Dev.	3
HY 101 World History	3
Electives	10

FCD 307 Growth & Dev. of Child	5
HY 102 World History	3
SY 201 Sociology	5
Electives	5

HY 103 World History	3
FCD 327 The Child in a Culturally Disadv. Family	5
Electives	10

JUNIOR YEAR

FCD 417 Guidance of Young Child.	3
FCD 417L Guidance of Young Child. Lab.	2
EC 200 Gen. Economics	5
Approved Elective	8

PG 330 Social Psychology	5
FCD 523 Management for Mod. Liv.	3
Approved Elective	10

FCD 437 Teaching Methods Preprimary Ed.	3
FCD 437L Teaching Methods Prepri. Ed. Lab.	2
U 400 Psy. Study of the Community	3
Electives	10

SENIOR YEAR

FCD 457 Family Relationships	5
Electives	13

FCD 467 Parent Education	5
CA 431 Man-Environment Relations	2
Electives	11

FCD 497 Internship in Agencies Serv. Child & Fam. or	15
Electives	

Total — 210 quarter hours

CHILD DEVELOPMENT OPTION - APPROVED PROFESSIONAL ELECTIVES

AT 342 Elementary School Art	5	IED 472 Books for Young Children	4
EED 103 Orientation	1	MU 371 Introduction to Music	3
EED 104 Intro. to Lab. Experiences	1	MH 281 Elementary Mathematics (or MH 100)	5
FCD 208 Physical Health in Early Childhood	2	SP 273 Group Problem Solving Through Discussion	5
FCD 308 Mental Health in Early Childhood	3	SP 450 Principles of Speech Correction	5
FCD 447 Directed Teaching Prepri. Education	5		
FED 214 Psychological Foundations of Education	5		

Certification in Early Childhood Education may be obtained by taking the additional required courses offered for that major in Elementary Education.

FAMILY RELATIONS OPTION - APPROVED PROFESSIONAL ELECTIVES

BI 104 Biology in Human Affairs	5	FED 213 Human Development	5
FCD 304 Home and Family Life	3	PG 433 Personality	4
FCD 317 Adolescent and the Family	5	SP 273 Group Problem Solving Through Discussion	5
FCD 357 The Aged and His Family	4		
FCD 437 Teaching Methods Prepri. Ed.	5		

Cooperative Extension Service Option - See Page 168.

Child Study Laboratories

The Department of Family and Child Development provides three laboratories for the study of child development and human relations, two nursery schools for children three to five years of age and a kindergarten for five-year olds. The nursery school meets from 9:00 a.m. to 12 noon. A hot lunch is served to the three-year olds. The kindergarten is in session from 1 to 4 p.m. Children admitted to the child study laboratories are selected from an application list. Applications may be placed with the Department of Family and Child Development when the child is 1½ years old. Children are admitted on an early application basis and laboratory needs.

Home Management and Family Economics (HME)

The Home Management and Family Economics major is designed for students interested in a broad general education in home economics. Professional preparation is offered for positions in consumer economics, family economics, financial counseling, Cooperative Extension Service, home service and other areas of business, requiring a background in home management and social science. Valuable experience may be gained for graduate study.

Curriculum in Home Management and Family Economics (HME)**FRESHMAN YEAR**

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	CA 105 Fund. of Clothing	5
CA 116 Art for Everyday Living	3	CA 115 Clothing and Man	3	EH 103 English Comp.	3
MH 159 Precalculus Math	5	BI 101 Prin. of Biology	4	FCD 257 Fam. & Human Dev.	3
NF 119 Nutrition and Man	3	BI 101L Prin. of Biology Lab.	1	BI 104 Bio. in Human Affairs	5
FCD 110 Contem. Home Ec.	1	or		or	
LY 101 Use of Library	1	CH 103 General Chemistry	4	CH 104 General Chemistry	4
PE Physical Education	1	CH 103L Chemistry Lab.	1	CH 104L Chemistry Lab.	1
		HY 101 World History	3	HY 102 World History	3
		CA 113 Housing for Man	3		
		PE Physical Education	1		

SOPHOMORE YEAR

FCD 257 Family & Human Development	3	EH 254 English Lit.	3	EC 200 Economics I	5
EH 253 English Lit.	3	PS 204 Found. of Physics	5	SY 201 Intr. to Sociology	5
VM 210 Human Physiology	5	PG 211 Psy. I	3	CA 235 Home Equipment	5
HY 103 World History	3	NF 202 Meal Management	5	PG 212 Psychology II	5
HF 102 Foods and Nutrition	5	SP 202 App. Oral Comm.	3		

JUNIOR YEAR

First Quarter

FCD 323 Mgt. for Modern Living	3
FCD 307 Growth & Dev. of Child.	5
CA 355 Consumer Textiles	3
IM 315 Agr. Journ.	3
or	
221 Beg. News	3
CA 303 The House	3
or	
493 House Util. Core	5

Second Quarter

VM 311 Gen. Bacteriology	5
CA 333 Light. Equipment	3
CA 343 Interior Home Prob.	5
Elective	5

Third Quarter

CA 310 Mass Commun. in Fam. and Consumer Serv.	3
MN 341 Business Law	3
or	
CA 401 Ext. Org. & Methods	5
U 400 Psy. Study of the Community	3
Elective	5

SENIOR YEAR

CA 453 Cons. & the Mkt.	5
FCD 443 Home Mgt. Residence	5
Electives	7

FCD 463 Family Economics	5
CA 433 Food Equipment	5
Electives	7

FCD 457 Family Relations	5
CA 431 Man-Environ. Rel.	2
Electives	8

Total — 210 quarter hours

Family and Child Services (FCS)

Family and Child Services is a broadly-based curriculum designed to provide students with the relevant knowledge and motivation to undertake graduate professional social work education or to enter employment in human service occupations and professions not requiring graduate education immediately upon receiving their bachelor's degree. A multidisciplinary approach utilizing concepts from anthropology, biology, economics, history, philosophy, political science, psychology, sociology, and human development evokes an integrated view of man and society.

Curriculum in Family and Child Services (FCS)

FRESHMAN YEAR

First Quarter

EH 101 Eng. Comp.	3
HY 101 World History	3
PA 210 Intr. to Phil.	3
FCD 257 Fam. & Hum. Devel.	3
FCD 207 Prenatal & Infant Dev.	3
LY 101 Use of the Lib.	1
PE Physical Education	1

Second Quarter

EH 102 Eng. Comp.	3
HY 102 World History	3
BI 101 Prin. of Bio.	5
FCD 208 Phy. Health in Early Childhood	2
Humanities Elective	3
PE Physical Education	1

Third Quarter

EH 103 Eng. Comp.	3
HY 103 World History	3
BI 104 Bio. in Hum. Affairs	5
SP 273 Group Prob. Solving Through Discussion	5
PE Physical Education	1

SOPHOMORE YEAR

PG 211 Psychology I	3
SY 201 Intr. to Soc.	5
PA 302 Intr. to Ethics	3
Math Elective	5

PG 212 Psychology II	3
SY 204 Soc. Behavior	5
FCD 307 Growth & Devel. of Children	5
NF 372 Fund. of Nutrition	3
Human Sci. Elective	3

NF 362 Prob. in Comm. Nutrition	3
SY 203 Cultural Anthropology	5
EC 200 Economics I	5
FCD 327 The Child in Cul. Dis. Family	5

JUNIOR YEAR

U 400 Psy. Study of the Community	3
PO 323 Mun. Govt. in U.S.	5
SY 301 Soc. of the Fam.	5
FCD 310 Tech. of Interviewing	2
FCD 323 Management for Modern Living	3

PG 215 Quantitative Meth. in Psy.	4
FCD 317 Adoles. & Fam.	5
SY 406 Intr. to Soc. Welfare	5
PG 330 Soc. Psy.	4

FCD 357 Aged & His Fam.	3
SY 304 Minority Group	5
SY 308 Juvenile Delin.	5
Human-Sci.-Math Elective	5

SENIOR YEAR

FCD 497 Internship	5
SY 414 Field Instruction	5
Elective	3

FCD 457 Family Relations	5
FCD 497 Internship	5
PG 435 Behavior Path.	4
App'd Prof. Elective	5

FCD 467 Parent Ed.	5
PO 325 Intr. to Pub. Admin.	5
Electives	8

Total — 208 quarter hours

Department of Nutrition and Foods

The Department of Nutrition and Foods is primarily concerned with the healthy physical growth and development of individuals and families.

Through its majors in Nutrition and Foods, Institution Food Management, and Pre-Nursing Science, this department prepares students for careers in teaching, research and health services in college, university, community, hospital, industry, and in government on the local, state, national and international level.

Institution Food Management (IFM)

The Institution Food Management major trains both men and women to manage efficiently commercial, industrial, and institution food service operations. Food Production, consumption and service is today the second largest business in the world and demands highly trained personnel.

Curriculum in Institution Food Management (IFM)

FRESHMAN YEAR

First Quarter	Second Quarter	Third Quarter
EH 101 Eng. Comp. 3	CH 102 Gen. Chem. 2	CH 104 Gen. Chem. 4
NF 119 Nutr. and Man. 3	CH 103L Chem. Lab. 1	CH 104L Chem. Lab. 1
HY 101 World History 3	EH 102 Eng. Comp. 3	EH 103 Eng. Comp. 3
CH 101 Intr. Chem. 101 2	NF 102 Foods & Nutr. 5	HY 103 World History 3
MH 159 or 160 Math. 5	HY 102 World History 3	‡Basic ROTC
‡Basic ROTC	LY 101 Library Science 1	or elect.—women 1
or elect.—women 1	‡Basic ROTC	PE Physical Education 1
PE Physical Education 1	or elect.—women 1	NF 202 Meal Mgt. 5
	PE Physical Education 1	

SOPHOMORE YEAR

CH 203 Organic Chem. 5	EC 200 Economics I 5	EC 202 Economics II 5
EC 211 Accounting 5	SY 201 Intr. to Sociology 5	SP 202 App. Oral Comm. 3
EH 253 Lit. in Eng. 3	‡Basic ROTC	‡Basic ROTC
‡Basic ROTC	or elect.—women 1	or elect.—women 1
or elect.—women 1	PS 204 Physics 5	VM 210 Physiology 5
PG 211 Psychology I 3		Elective 3

JUNIOR YEAR

MN 341 Business Law 5	NF 352 Inst. Org. & Per. Mgt. 5	MT 331 Prin. of Mkt. 5
NF 412 Quantity Food Production 5	NF 372 Nutr. & Health 3	EC 333 Salesmanship 3
IM 315 Ag. Jo. 3	VM 311 Bacteriology 5	NF 362 Problems in Comm. Nutrition 3
*Elective 5	Elective 5	*Elective 7

*To qualify for ADA membership through therapeutic and administrative dietetics, students will be required to take NF 312, Nutritional Biochemistry; NF 372, 342, Nutrition and Diet; NF 402 Diet Therapy, FED 214, Educational Psychology.

SENIOR YEAR

MT 432 Advertising 3	NF 432 Food Serv. Plan. Lay-out Equip. 5	AH 310 Meat & Meat Prod. 3
IE 301 Elec. Data Proc. 5	DH 411 Food Plant San. 5	NF 422 Inst. Food Purch. 5
Electives 8	NF 442 Catering 3	NF 482 Food Serv. Cost Control 5
	NF 462 Exp. Foods 5	Elective 3

Total — 210 quarter hours

‡Male students may choose 6 hours of electives in lieu of Basic ROTC in consultation with their academic advisers.

Nutrition and Foods (NF)

Nutrition and Foods prepares majors for positions in research, teaching, extension, communications (journalism, radio, television), food service, dietetics (therapeutic, clinical, consulting, administrative). Such positions are available in private industry, hospitals, government agencies and educational institutions.

Curriculum in Nutrition and Foods (NF)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 English Comp.	3	EH 102 English Comp.	3	EH 103 English Comp.	3
HY 101 World History	3	HY 102 World History	3	HY 103 World History	3
CH 101 Intr. Chem.	2	CH 102 Gen. Chemistry	2	CH 104 Gen. Chemistry	4
MH 159 or 160 Math	5	CH 103L Gen. Chemistry	1	CH 104L Gen. Chemistry	1
NF 119 Nutrition & Man	3	Lab.	1	Lab.	1
FCD 110 Contemporary		CA 115 Clothing & Man.	3	NF 102 Foods and Nutrition	5
H. Ec.	1	CA 116 Art for Everyday	3	PE	Physical Education 1
PE	Physical Education 1	Living	3		
		LY 101 Use of Library	1		
		PE	Physical Education 1		

SOPHOMORE YEAR

CH 203 Organic Chem.	5	EC 200 Economics I	5	PG 211 Psychology I	5
NF 202 Meal Management	5	ACF 211 Accounting	5	NF 312 Nutr. Bio. Chem.	5
SY 201 Intr. to Sociology	5	EH 253 Lit. in English	3	VM 210 Physiology	5
CA 115 Housing for Man	3	FCD 257 Fam. & Human	3	SP 202 App. Oral Comm.	5
		Dev.	3		

JUNIOR YEAR

FED 214 Ed. Psychology	5	NF 352 Inst. Org. & Mgt.	5	PS 204 Physics	5
FCD 323 Mgt. for Modern		VM 311 Bacteriology		JM 315 Ag. Journalism	3
Living	3	or		NF 362 Problems in	
NF 372 Fund. of Nutr.	3	VM 200 Microbiology	5	Comm. Nutr.	3
Electives	7	SY 220 Statistics		Prof. Elec.	7
		or			
		Approved Elec.	5		
		Prof. Elec.	3		

SENIOR YEAR

NF 412 Qty. Food		NF 342 Nutr. & Diet	5	NF 402 Diet Therapy	5
Production	5	NF 462 Exp. Foods	5	NF 422 Inst. Food	
Prof. Elect.	12	Electives	8	Purchasing	5
				CA 431 Man-Environment	
				Relations	2
				Elective	5

Total — 210 quarter hours

Special areas of interest in Nutrition, Dietetics, Food Science, Communication in Food & Nutrition, Research, and Teacher Education may be developed through choice of elective courses.

Pre-Nursing Science (NS)

Pre-Nursing Science provides Nursing Science majors with a basic two-year program. Upon satisfactory completion, students will be assisted with transfer to an accredited School of Nursing for completion of the baccalaureate program in nursing. The Emory University, the University of Alabama, and other accredited schools of nursing have approved this program as meeting their pre-nursing requirements.

Curriculum in Pre-Nursing Science (NS)

FRESHMAN YEAR

First Quarter		Second Quarter		Third Quarter	
EH 101 Eng. Comp.	3	BI 101 Biology	4	CH 104 Gen. Chem.	4
NF 102 Foods & Nutr.	5	BI 101L Biology Lab.	1	CH 104L Chem. Lab.	1
HY 101 World History	3	CH 102 Gen. Chem.	2	HY 103 World History	3
CH 101 Intr. Chem.	2	CH 103L Chem. Lab.	1	EH 103 Eng. Comp.	3
MH 159 or 160 Math	5	EH 102 Eng. Comp.	3	PE	Physical Education 1
PE	Physical Education 1	HY 102 World History	3	*BI 104 Human Biology or	
		LY 101 Library Science	1	**VM 220 Human Anat. &	
		PE	Physical Education 1	Physiology	5

SOPHOMORE YEAR

CH 203 Organic Chem.	5	FCD 207 Prin. of Child		FED 214 Educ. Psychology	5
PG 211 Psych. I	3	Development	3	NF 312 Biochemistry	5
SY 201 Intr. to Sociology	5	NF 372 Nutr. & Health	3	NF 362 Problems in Comm.	
*VM 210 Physiology or		PG 212 Psych. II	3	Nutrition	3
**VM 221 Human Anat. &		*PA 330 Philosophy of Rel.		EH 253 Lit. in Eng.	3
Physiology	5	or		SP 202 App. Oral Comm.	
		VM 311 Bacteriology	5	or Elective	3
		**PS 204 Physics	5		

Total — 108 quarter hours

*Courses required by Emory University.

**Courses required by the University of Alabama.

Dual Objective Program with the School of Education

Teacher Education: Admission to the Teacher Education Program of the School of Education is open to students registered in the School of Home Economics to the same extent that it is open to students registered in the School of Education. Upon completion of all requirements of both the Teacher Education Program and curriculum requirements in the School of Home Economics in any one of five areas, the Dean of the School of Education will recommend to the State Department of Education that the appropriate professional certificate be issued. The five majors within the dual objective program are as follows:

Family Life and Early Childhood Education
Clothing, Textiles and Related Art
Nutrition and Foods
Home Management and Family Economics
Housing and Equipment

It is considered desirable for students who wish to engage in junior high or high school teaching to identify this objective as soon as possible in their four-year undergraduate work. Such students will be advised by two advisers, a professional education adviser in the School of Education and an academic adviser in the School of Home Economics. The advisers will counsel in their respective areas. Flexibility in scheduling student course requirements is to be permitted in the pursuit of the requirements for both the Home Economics curricula and Teacher Education training.

Option in Cooperative Extension

Students enrolled in any of the majors in the School of Home Economics may prepare for a career in the Cooperative Extension Service through selection of certain courses as electives. The major of Home Management and Family Economics meets the requirements of this option. Other majors may also fulfill the requirements of the Cooperative Extension Service through scheduling of the following courses.

<i>NF</i>	<i>CA</i>	<i>FCD</i>
102	105	307
202	235	323
322	343	463
372	401 or AS 441	467
362	or VED 415	
	355 or 225	
	453	
	493	

GRADUATE WORK

The School of Home Economics offers work leading to the Master of Science degree, Master of Arts degree, and to the professional degree, Master of Home Economics. For further information consult the Home Economics course descriptions and the graduate catalog.

School of Pharmacy

SAMUEL TERRY COKER, *Dean*

THE SCHOOL OF PHARMACY is a member in good standing of the American Association of Colleges of Pharmacy, which promotes pharmaceutical education. It is also fully accredited by the American Council on Pharmaceutical Education, which formulates the educational, scientific and professional principles and standards which approved Schools of Pharmacy are expected to meet and maintain.

Careers in Pharmacy

The thorough academic background provided by the five-year curriculum prepares students to pursue a variety of careers. Excellent opportunities exist in community pharmacy, wholesale pharmacy, industrial pharmacy (research, product development, analytical control and product manufacture, sales and distribution), hospital pharmacy, public health, Food & Drug Administration, toxicology, and research and teaching after further education. Pharmacy, especially hospital pharmacy, offers outstanding opportunities for women. Many opportunities exist in each of these areas for the pharmacist of the future.

Curriculum in Pharmacy (PY)

Admission Requirements

The curriculum in pharmacy prepares students for licensure by the pharmacy boards of the various states as well as for careers in those areas of pharmacy not requiring registration.

The entrance requirements of the School of Pharmacy may be satisfied by completion of the basic six quarter pre-pharmacy curriculum as outlined on page 97. Any or all of these requirements may be met by transfer. A minimum grade point average of 1.00 is required for successful completion of the pre-pharmacy curriculum.

The student must make application to the Pharmacy Admissions Committee for determination of eligibility. Special application forms are available from the School of Pharmacy and the University Office of Admissions. A transfer student must submit an application to the Pharmacy Admissions Committee at least 30 days prior to the expected date of admission. This application is in addition to the one required for admission to Auburn University. Students on the Auburn campus should follow the schedule suggested by the pre-pharmacy adviser. Transfer students from Junior Colleges may receive no more than 109 quarter hours credit (equal to two years of pre-pharmacy) whereas students transferring from four-year institutions will receive no more than 127 quarter hours credit for work completed in a non-pharmacy curriculum.

A candidate for the Bachelor of Science in Pharmacy degree must complete 20 hours in the areas of Humanities and Social Sciences (Group I) with a minimum of 12 hours in courses of at least sophomore level in one and a minimum of 8 hours in courses of at least sophomore level in the other of these two general areas. Some of the courses included in these two areas are required for the Bachelor of Science degree in Pharmacy and may be scheduled any time prior to the third professional year. It is recommended that these required courses be scheduled early in order to avoid possible scheduling difficulties.

In addition to the 20 hours required in the areas of Humanities and Social Sciences, a student may complete his remaining elective requirement in these two areas or in the areas of Mathematics and Natural Science (Group II).

Curriculum Options

After admission to the School of Pharmacy students may choose either a professional option in preparation for general practice, including hospital pharmacy, or a scientific option in preparation for industry, research or teaching. The program of each student under either option must be approved by the adviser and those choosing the scientific option must have the approval of the Dean. Both options will adequately prepare students for State Board examinations. It is hoped that these options will motivate the superior student to achieve an educational level consistent with his ability and interests.

Electives should be chosen according to the interests of the student and approved by the adviser.

Students who are qualified and have the prerequisites may take up to 10 hours of graduate courses in their fifth year. Such work cannot be applied toward both the undergraduate and graduate degrees. Registration in graduate courses must be approved by the Dean of Graduate School.

Attention is called to the following regulation of the American Council on Pharmaceutical Education: "No student may graduate from a recognized college or school of pharmacy who has spent less than three scholastic years of nine quarters or six semesters in residence at said school or college."

Scholarships and Loans

Information concerning available scholarships and loans may be obtained by contacting the Director of Student Financial Aid, or the Dean, School of Pharmacy, Auburn University.

Pharmacy Extension Program

A program of extension and continuing education is available for Alabama pharmacists. The rapid advancements being made in the pharmaceutical sciences make it imperative to bring new knowledge and refresher courses to the pharmacist in or near his home. Meetings will be held throughout the year, enabling most Alabama pharmacists to avail themselves of the educational service. Faculty members of the School, as well as experts in industry and in state and federal governmental agencies, will serve as instructors.

Curriculum in Pharmacy (PY)

FIRST PROFESSIONAL YEAR*		
First Quarter	Second Quarter	Third Quarter
PY 100 Convocation** 0	PY 100 Convocation 0	PY 100 Convocation 0
PY 201 Inorganic Phar. Chem. 5	PY 203 Organic Phar. Chem. I 5	PY 102 Phar. Mathematics 3
PY 205 History of Pharmacy 3	VM 200 Microbiology 5	PY 302 Organic Phar. Chem. II 5
CH 301 Biochemistry 5	CH 302 Biochemistry 4	PY 306 Pharmacognosy I 5
EC 200 General Economics 5	EC 211 Intr. Accounting 5	VM 204 Pathogenic Microbio. 5
SECOND PROFESSIONAL YEAR		
PY 100 Convocation 0	PY 100 Convocation 0	PY 100 Convocation 0
PY 301 Phar. Tech. I 5	PY 303 Phar. Tech. II 5	PY 304 Phar. Tech. III 5
PY 407 Chemotherapy 5	PY 405 Pharmacology I 5	PY 406 Pharmacology II 5
ZY 424 Animal Physiology 5	***PY 307 Pharmacognosy II 5	PY 404 Chemistry of Natural Products 5
	Elective 3	
THIRD PROFESSIONAL YEAR		
PY 100 Convocation 0	PY 100 Convocation 0	PY 100 Convocation 0
PY 400 Disp. Pharmacy I 5	PY 401 Disp. Pharmacy II 5	PY 402 Disp. Pharmacy III or 5
***PY 416 Drug Marketing 5	PY 415 Phar. Jurisprudence 3	PY 411 Elements of Phar. Mfg. 5
Elective 5	***PY 408 Pharmacy Mgt. I 3	PY 428 Public Health 5
Professional Elective 3	Professional Elective 5	***PY 409 Pharmacy Mgt. II 3
		Elective (Group II) 5

Total — 153 quarter hours

*Options may be chosen at the beginning of the First Professional Year.

**Required of all Pharmacy students each quarter.

***With consent of the adviser and approval of the Dean, those electing the scientific option may substitute courses of equal credit for these subjects.

NOTES: 1. Proficiency in typing is required for admission to the fifth year.

2. Students are expected to participate in field trips to a pharmaceutical manufacturing plant during their junior or senior year, and to a wholesale drug company during their senior year.

3. A set of Class C Metric and Apothecaries' weights, which may be purchased from Pharmacy Supply, is required for all Pharmacy laboratories.

Group I Electives: Courses in Departments of English, Foreign Language*, Speech, Philosophy, Music, Drama and Art, Psychology, Sociology, Economics, Business Administration, Geography, History, and Political Science.

Group II Electives: Courses in Departments of Mathematics, Chemistry, Physics, Animal Science, Poultry Science, Veterinary Medicine, Botany, Zoology, and Pharmacy.

*Ten hours must be completed in one language for credit.

RECOMMENDED ELECTIVES

SP 202, PG 211, PG 212, EH 214, EH 253, EH 254, any Foreign Language (2 quarters of one language required for credit), PA 210, PA 211, PA 212, HY 201, HY 202, EC 201, EC 212, EC 341, MH 162, MH 163, MH 264, MH 367, IE 204, BY 401, ZY 300, ZY 301, ZY 302, PY 101, PY 202, PY 305, PY 308, PY 432. Any course in Groups I or II of 300 level or higher may be considered as a suitable elective.

School of Veterinary Medicine

J. E. GREENE, *Dean*

NELSON KING, *Assistant Dean*

THE SCHOOL OF VETERINARY MEDICINE offers a fully accredited program of training leading to the degree of Doctor of Veterinary Medicine. The curriculum requires four years in the professional school after completion of at least seven quarters of the pre-professional course.

Specific Information

Admission

Seven quarters of general college work, with a minimum honor point average of 1.25 on all courses attempted and on all required courses is required for admission. A grade of D on any required course will not be accepted. The Committee on Admissions of the School of Veterinary Medicine may require a personal interview with any applicant and may also require a reading comprehension test, or an examination on any required course. The School of Arts and Sciences offers a two-year Pre-Veterinary Medicine Curriculum which is available to residents of Alabama. Although farm experience is not a requirement for admission, applicants are urged to gain such experience. Students without farm knowledge frequently have difficulty with certain courses, particularly in the clinical areas. Applications for admission to the pre-veterinary course should be made directly to the Admissions Officer, Auburn University.

Residents of states other than Alabama should complete the pre-professional requirements at institutions within their home state, since they are not eligible for admission to the pre-professional curriculum at Auburn University. One hundred and twenty quarter hours pre-professional work is required for entrance into the professional curriculum. This 120 quarter hours must include 15 quarter hours of inorganic chemistry, 10 quarter hours of organic chemistry, 10 quarter hours of physics, five quarter hours of genetics, 10 quarter hours of zoology, nine quarter hours of English, 10 quarter hours of college mathematics including calculus, five quarter hours of animal nutrition, three quarter hours of feeds and feeding, nine quarter hours of history, and three quarter hours of medical vocabulary. An additional 15 quarter hours of electives in humanities and fine arts, and the social sciences must be earned to meet the Liberal Educational requirements of the University. Ten quarter hours of Latin or modern language may be substituted for medical vocabulary, or this course may be taken through the Correspondence Study Department, Auburn University. Three semester-hour courses will be accepted as the equivalent in subject-matter content of five-quarter-hour courses.

Admission to the School of Veterinary Medicine must be gained through formal application not later than February 15 preceding the Fall Quarter in which admission is desired. Preliminary consideration for admission will be based on academic work completed prior to February 15. Final consideration will be based on academic work completed prior to June 15.

Applicants Should Submit the Following

1. Two completed applications for admission on form supplied by Auburn University. All applications must be submitted to the Dean, School of Veterinary Medicine, through proper channels by February 15 preceding admission date. (Only one transcript is required of students formerly enrolled at Auburn University.)

2. Two official transcripts from each college or university attended.

3. A list of courses in progress at time of application, if any.

4. Letters of recommendation from three persons vouching for character, integrity and general qualifications.

Those applicants who have not completed all requirements for admission at the time of application must submit by July 1 two supplemental official transcripts of any work completed after application is filed.

If a student is admitted to the School of Veterinary Medicine, he must submit in addition to the above, one completed physical examination report on a form supplied by Auburn University at least three weeks prior to date of registration (not required by students formerly enrolled at Auburn University), and an application processing fee.

The final selection of students is made by the Committee on Admissions of the School of Veterinary Medicine, Auburn University. These selections are made from the applicants who have been certified by the committees in the respective states after giving due consideration to scholastic record and general adaptability for the profession. The right is reserved to accept or reject any applicant. All applications for admission must be on file at the School of Veterinary Medicine by February 15 preceding date of admission.

Microscopes. — In order to be admitted to the School of Veterinary Medicine, students must own a compound microscope acceptable to the faculty. Students must furnish a microscope in all courses requiring the use of this instrument. Microscopes may be purchased through the Book Store of Auburn University.

Admission under the Regional Plan. — Under the Regional Plan for Veterinary Training, the School of Veterinary Medicine serves six states — Alabama, Florida, Kentucky, Louisiana, Mississippi and Tennessee. While there is no limit on the number of applications, the School's facilities make it necessary to restrict admissions.

The Land-Grant Institution in each state participating under the Southern Regional Education plan maintains counseling and guidance service for students desiring admission to the School of Veterinary Medicine. Students attending other than Land-Grant Institutions of the several states should contact the counseling and guidance service for information and advice concerning courses which will be acceptable in the pre-veterinary curriculum. Inquiries should be made early and addressed to:

Alabama:	Dean, School of Arts and Sciences Auburn University Auburn, Alabama
Florida:	Dean, College of Agriculture University of Florida Gainesville, Florida
Kentucky:	Executive Secretary Council on Public Higher Education State National Bank Building Annex Frankfort, Kentucky
Louisiana:	Head, Department of Veterinary Science Louisiana State University Baton Rouge, Louisiana
Mississippi:	Dean, School of Agriculture Mississippi State University State College, Mississippi
Tennessee:	Dean of Resident Instruction College of Agriculture University of Tennessee Knoxville, Tennessee

The procedure for making application for admission to the School of Veterinary Medicine under the Regional Plan varies in the several states. An officer, or board, in each state certifies applicants as to residence and evaluates the courses completed. Courses acceptable in the degree program at the State Land-Grant Institution will be considered acceptable in the Auburn University pre-veterinary program. An applicant who wishes to be included in his state's list of eligibles for entrance into the School of Veterinary Medicine should send his completed application together with three letters of recommendation and transcripts covering all college work completed to the appropriate address as indicated below:

Alabama:	Dean, School of Veterinary Medicine Auburn University Auburn, Alabama
Florida:	Certification Committee for Regional Education State University System of Florida Office of the Board of Regents Tallahassee, Florida
Kentucky:	Chairman Committee on Regional Veterinary Training University of Kentucky Lexington, Kentucky
Louisiana:	Chairman, Certification Committee Louisiana State University Baton Rouge, Louisiana
Mississippi:	Executive Secretary Board of Trustees for Institutions of Higher Learning State Capitol Jackson, Mississippi

Tennessee: Committee on Regional Veterinary Training
 University of Tennessee
 Knoxville, Tennessee

Scholastic Requirements

All applicants and students in the professional program are subject to the academic and disciplinary regulations of the School of Veterinary Medicine in addition to those of Auburn University.

Any student who earns less than a 1.25 honor point average for any quarter will be placed on academic probation. A student who fails to earn a 1.25 honor point average for any two quarters in the same academic or calendar year may be dropped from the rolls of the School of Veterinary Medicine for scholastic deficiency. A student who makes a grade of "F" on any course may be required to withdraw from the School of Veterinary Medicine until such time as the course is offered again. Such student may be required to repeat certain other courses in the curriculum for that quarter.

Required Withdrawal

The faculty of the School of Veterinary Medicine reserves the right to require the withdrawal at any time of any student who in the judgment of the faculty is not profiting or is not likely to profit by the instruction offered, who is neglectful, irregular or indifferent in the performance of required duties and studies, or whose character or conduct is inconsistent with good order of the veterinary school or with the standards of the veterinary profession.

Requirements for Graduation

To be eligible for the D.V.M. degree, candidates must complete all of the required courses in the order listed in the curriculum in veterinary medicine with a minimum over-all honor point average of 1.25.

A graduation fee of \$10.00 must be paid at the beginning of the quarter of graduation and all indebtedness due the institution must be paid prior to graduation.

Orientation Program

All veterinary medical students who are new students admitted to the school will attend an orientation program just prior to the beginning of the Fall Quarter. At this time faculty members will be introduced and information will be given concerning the program of instruction, operation of the Honor Code, and other information of general interest to beginning students.

Counseling and Advising

In the School of Veterinary Medicine, the school office is the counseling center. The responsibility for counseling is shared by the Dean, Assistant Dean and members of the teaching staff.

Curriculum in Veterinary Medicine (VM)

FIRST YEAR

First Quarter		Second Quarter		Third Quarter	
VM 320	Anatomy I _____ 5	VM 321	Anatomy II _____ 5	VM 322	Anatomy III _____ 5
VM 326	Histology _____ 5	VM 327	Organology _____ 5	VM 328	Embryology _____ 5
VM 330	Vet. Micro. I _____ 5	VM 331	Vet. Micro. II _____ 5	VM 336	Physiology IV _____ 5
VM 318	Physiology I _____ 3	VM 329	Physiology II _____ 3	VM 332	Physiology III _____ 3

SECOND YEAR

VM 436	Pharmacology I _____ 5	VM 444	Physiology VI _____ 5	VM 438	Pharmacology III _____ 5
VM 443	Physiology V _____ 5	VM 451	Pathology II _____ 5	VM 461	Vet. Micro. III _____ 5
VM 450	Pathology I _____ 5	VM 457	Vet. Parasit. II _____ 5	VM 452	Clinical Pathology _____ 3
VM 456	Vet. Parasit. I _____ 3	VM 437	Pharmacology II _____ 3	VM 453	Pathology III _____ 3
				VM 458	Vet. Parasit. III _____ 3

THIRD YEAR

PH 422	Avian Disease _____ 5	VM 501	Vet. Medicine II _____ 5	VM 504	Vet. Surgery II _____ 5
VM 500	Vet. Medicine I _____ 5	VM 523	Veterinary Public Health I _____ 5	VM 512	Vet. Surgery III _____ 5
VM 510	Vet. Medicine IV _____ 5	VM 503	Vet. Surgery I _____ 3	VM 502	Vet. Medicine III _____ 3
VM 534	Lab. Animal Medicine _____ 3	VM 530	Vet. Radiology _____ 3	VM 519	Vet. Medicine V _____ 3
VM 526	Clinics I _____ 2	VM 527	Clinics II _____ 2	VM 550	Vet. Obstetrics II _____ 2
VM 525	Jurisp. & Ethics _____ 1	VM 540	Vet. Obstetrics I _____ 2	VM 508	Clinics III _____ 1
		VM 531	Jurisp. & Ethics _____ 1	VM 509	Clinics IV _____ 1

FOURTH YEAR

VM 554	Vet. Medicine VI _____ 5	VM 555	Vet. Medicine VII _____ 5	VM 556	Vet. Medicine VIII _____ 5
VM 569	Veterinary Public Health II _____ 5	VM 559	Vet. Medicine IX _____ 3	VM 588	Vet. Medicine XI _____ 5
VM 542	Applied Anatomy _____ 3	VM 561	Vet. Medicine X _____ 3	VM 568	Clinics IX _____ 3
VM 560	Vet. Obstetrics III _____ 3	VM 567	Clinics VII _____ 3	VM 582	Seminar _____ 3
VM 566	Clinics V _____ 3	VM 564	Clinics VIII _____ 2	VM 565	Clinics X _____ 2
VM 563	Clinics VI _____ 2	VM 552	Jurisp. & Ethics _____ 1	VM 574	Vet. Surgery VI _____ 1
VM 572	Vet. Surgery IV _____ 1	VM 573	Vet. Surgery V _____ 1		

Total — 230 quarter hours

Graduate

All departments offer programs through the Graduate School leading to a Master of Science degree. Master's degree candidates may be required to pass a preliminary oral and/or written examination to demonstrate adequate knowledge in their chosen fields. A doctoral program leading to a Doctor of Philosophy degree is offered in Physiology. This is an interdisciplinary program that offers sufficient flexibility to permit students to adapt programs to their individual needs.

Extension

Under the direction of the Vice President for Extension this school provides continuing education programs throughout the year in Auburn and at off-campus sites.

The Graduate School

W. V. PARKER, *Dean*
PAUL F. PARKS, *Assistant Dean*

ALL REGULATIONS governing the Graduate School are designed to equal or exceed the minimum standards recommended by the Commission on Colleges and Universities of the Southern Association of Colleges and Schools.

A student with a bachelor's degree from an accredited college or university may apply to the Dean of the Graduate School for admission. Application forms for admission may be secured from the Graduate School and must be submitted at least three weeks before registration. Two transcripts of undergraduate credits and satisfactory scores on the Aptitude Test of the Graduate Record Examinations must also be submitted. Every applicant must have a satisfactory undergraduate record and show adequate preparation in the field in which he desires to major as determined by the screening committee of the department or unit concerned.

The Graduate School bulletin should be consulted for detailed information on the regulations of the Graduate School, the courses offered for graduate credit, the requirements for degrees, fellowships and assistantships, and other matters pertaining to graduate work in this institution. Undergraduates wishing to register for graduate courses should consult the Graduate bulletin for regulations concerning such registration. A bulletin may be obtained upon request from the Dean of the Graduate School.

The Graduate School administers graduate work leading to the degrees listed below.

Graduate Degrees

The Master's Program

Master of Science in the areas of Aerospace Engineering; Agricultural Economics and Rural Sociology; Agricultural Engineering; Agronomy and Soils; Animal Science; Animal Nutrition; Botany and Plant Pathology; Business Administration; Chemical Engineering; Chemistry; Civil Engineering; Consumer Affairs; Counselor Education; Dairy Manufacturing; Dairy Production; Economics; Educational Administration; Electrical Engineering; Elementary Education; Entomology; Family and Child Development; Fisheries Management; Forestry; Health, Physical Education and Recreation; Horticulture; Industrial Engineering; Mathematics; Mechanical Engineering; Nuclear Science; Nutrition and Foods; Ornamental Horticulture; Pharmacy; Physics; Poultry Science; Psychology; Secondary Education; Toxicology; Veterinary Medicine; Vocational and Adult Education; Wildlife Management; and Zoology.

Master of Arts in the areas of English; History; Political Science; Spanish; and Speech.

Other Master's Degrees: Master of Fine Arts, Master of Business Administration, Master of Education, Master of Home Economics, Master of Urban and Regional Planning, Master of Arts in College Teaching.

The Specialist in Education Program

Specialist in Education in Administration and Supervision Curriculum, and Teaching; Counseling and Student Personnel; and Educational Media.

The Doctoral Degree Program

Doctor of Education in School Administration and Supervision and Guidance; Counselor Education, Elementary Education, and Secondary Education.

Doctor of Philosophy in the Departments of Aerospace Engineering, Agronomy and Soils, Animal Science, Botany and Plant Pathology, Chemistry, Electrical Engineering, English, Forestry, History, Mathematics, Mechanical Engineering, Physics, Poultry Science, Psychology, and Zoology-Entomology, and interdisciplinary programs in Agricultural Engineering, and Physiology.

Research Program with the Oak Ridge Associated Universities

Auburn University is one of the sponsoring institutions of the Oak Ridge Associated Universities research program located at Oak Ridge, Tennessee. Through this cooperative association our graduate research programs have at their disposal the facilities of the National Laboratories in Oak Ridge and the research staffs of these laboratories. When advanced degree candidates in certain areas have completed their residence work at Auburn it is possible, by special arrangement, for them to go to Oak Ridge to do their research problems and prepare their theses. In addition, it is possible for our faculty members to obtain appointments on the Oak Ridge Research Participation Program for varying periods, usually not less than three months, in order to pursue advanced studies in their fields of specialization. Thus, both faculty and students may keep abreast of the most modern and up-to-date developments in atomic and nuclear research that is in progress at the Oak Ridge Laboratories.

The students will go to Oak Ridge on Oak Ridge Graduate Fellowships. The stipend will be determined by the number of dependents of the student and by the level of work which he is prepared to do. Faculty members may work in Oak Ridge on stipends commensurate with their current college salary and rank.

Information on the opportunities for research in the Oak Ridge Laboratories is available in the office of the Dean of the Graduate School.

Auburn Computer Center

LELAND H. WILLIAMS, *Director**

The Auburn Computer Center, which is equipped with an IBM 360 model 50 computer, is administered by the Graduate School. Computer time is available for research, instructional, extension, or administrative projects with the endorsement of any University department. However, all researchers are encouraged to obtain external funds to support computer time and associated costs required for their work. Details concerning arrangements for the use of computer services are available in most departments but can also be obtained from the Director of the Computer Center.

*Resigned as of June, 1970.

Reserve Officers Training Corps

Department of Military Science

COLONEL ANDREW W. LAMAR, JR.
Commandant and Professor of Military Science

STUDY OF MILITARY SCIENCE at Auburn University dates back to the Civil War period. The Morrill Land Grant Act of 1862 requires that military instruction be furnished to students. Instruction in Military Science is under the supervision of an officer of the Active Army who is detailed as Professor of Military Science. By appointment of the college authorities he is Commandant of the ROTC students. The Professor of Military Science is assisted by a staff of commissioned and non-commissioned officers of the Army. The curriculum in Military Science is divided into two courses, basic and advanced. A description of course requirements is discussed in the following paragraphs.

Basic Course

The basic course consists of a six-quarter block of instruction normally taken during the freshman and sophomore years. During the freshman year, two hours of instruction (one classroom and one Leadership Lab) are taken each week for three quarters.

In the sophomore year three hours of instruction (two classroom and one Leadership Lab) are taken each week for three quarters. All freshman and sophomore military science classes are offered Fall, Winter and Spring quarters, with one credit hour being allowed each quarter.

Basic Camp

The basic camp consists of six weeks of field training conducted at an Army Post during the summer. Basic camp is not required for students completing the basic course described above. It is designed for transfer students who wish to substitute the successful completion of the basic camp for the six-quarters resident basic course and enroll in the advanced course. Transfer students may apply to the Professor of Military Science for a draft deferment and enter into an agreement to complete basic camp and the advanced course. While attending basic camp students are paid at the rate of \$115.20 per month. Reimbursement to the student for travel expenses is made at the rate of six cents per mile to and from camp. Uniforms, quarters, medical care and rations are furnished by the government during the camp period.

Advanced Course

The Advanced Course is designed to produce officers for the Army of the United States, both the Active Army and the Reserve. Successful completion of the Advanced Course at Auburn University qualifies the student for a commission as 2nd Lieutenant in one of the following branches of the United States Army Reserve: Adjutant General's Corps, Armor, Military Intelligence, Field Artillery, Air Defense Artillery, Chemical Corps, Corps of Engineers, Finance Corps, Infantry, Medical Service Corps, Military Police Corps, Ordnance Corps, Quartermaster Corps, Signal Corps, and Transportation Corps, based on student's choice and needs of the Army. Students who are designated Distinguished Military Students may apply for a Regular Army commission, if accomplished prior to graduation and designation as a Distinguished Military Graduate. The advanced course consists of a six-quarter course, normally taken during the junior and senior years, designed to qualify the student for appointment in any of the aforementioned branches. Three credit hours per quarter or a total of 18 credit hours are granted for completion of the Advanced Course; however, only six credit hours may apply towards total credits required for graduation. Students are paid subsistence pay of \$50.00 per month, not to exceed 20 months, while enrolled in the Advanced Course.

An advanced camp of six weeks duration must be attended by the student before he becomes eligible for a commission. Advanced camp is normally attended during the summer between the end of the junior and the start of the senior years. While attending advanced camp students are paid \$193 per month. Reimbursement to the students for travel expenses is made at a rate of six cents per mile to and from camp. Uniforms, quarters, medical care and rations are furnished by the government during the camp period. The applicant for the advanced course must:

1. Be a citizen of the United States.
2. Be physically qualified in accordance with standards prescribed by the Department of the Army.
3. Not have reached 28 years of age at time of appointment in the U.S. Army Reserve.
4. Have completed appropriate basic training (2 years basic course or basic camp) or have equivalent military or ROTC training in lieu thereof; have at least two (2) academic years to complete prior to graduation.
5. Have minimum overall academic average of 1.0.
6. Be selected by the Professor of Military Science and the President of Auburn University.
7. Enlist as a cadet in the U.S. Army Reserve.
8. Execute a written agreement with the Government to complete the two-year Advanced Course training and attend one Summer Camp (six weeks duration) preferably at the end of the first year of the Advanced Course. Agree in writing to accept an appointment as a commissioned officer in the Army Reserve and serve the prescribed period of duty.

Financial Assistance Program

The Army ROTC offers a scholarship program designed to provide financial assistance to outstanding young men in the program who are interested in the Army as a career. Each scholarship provides for free tuition, textbooks and laboratory fees in addition to pay of \$50 per month for the period that the scholarship is in effect. During a six-week summer training period, normally at the end of the junior year, this pay is increased to one-half of a second lieutenant's base pay. The scholarships are provided under provisions of Public Law 88-647, The ROTC Vitalization Act of 1964.

Scholarships may be awarded for periods of one, two, three or four years. Four year scholarships are awarded to selected high school applicants who plan to attend a University offering Army ROTC in its curricula.

Three and two year scholarships are awarded to selected applicants enrolled in freshmen and sophomore military science who are qualified to enter the advanced program.

The one year scholarship is awarded to selected junior applicants who have enrolled in advanced ROTC and have demonstrated outstanding leadership potential.

Recipients of Army ROTC scholarships agree to serve on active duty as a commissioned officer for a four year period. The remainder of the normal six year service obligation may be spent in the U. S. Army Reserve.

Army ROTC Aviation Program

Qualified second year advanced (MS IV) cadets may apply for enrollment in the Army ROTC Flight Training Program, subject to quota limitations. This program is conducted at no expense to the student. Participation in the program will not act to cause any reduction in the prescribed MS IV course. This course is an approved Federal Aviation Agency standardized flight instruction program consisting of 35 hours ground instruction and 36½ hours flight training. Satisfactory completion of the program of instruction will qualify the graduates for award of a FAA Private Pilot's certificate. Students must agree to a period of active duty for three years after completion of additional flight training in the active service.

Uniforms and Equipment

All students are required to deposit \$30.00 with the Bursar of the University prior to enrollment in the ROTC. They are furnished a uniform in good condition and other necessary supplies through the ROTC Supply Office. Upon completion of the course of instruction, or upon withdrawal, the uniform and other supplies are turned in and the deposit less \$1.50 per quarter is returned to the student.

Advanced ROTC students are furnished uniforms under the commutation system. Upon graduation, the uniform becomes the property of the advanced student.

Distinguished Military Students

The Professor of Military Science may designate as a Distinguished Military Student a person who:

1. Possesses outstanding qualities of leadership, high moral character, and definite aptitude for the military service.
2. Has attained an academic standing in the upper half of his class. An exception may be made only in the case of an individual student whose standing is in the upper 10 per cent of his class in military subjects, or who has shown exceptionally high motivation toward a military career.
3. Has demonstrated his leadership ability through his achievements while participating in recognized campus activities.
4. Has attained a class standing in the upper third of his ROTC class in the Advanced Course, Senior Division, ROTC.

Distinguished Military Students may make application for a commission in the Regular Army any time subsequent to such designation, but not later than the date on which they are designated Distinguished Military Graduates. If accepted they will be commissioned in the Regular Army upon graduation.

Distinguished Military Graduates

The Professor of Military Science may designate as a Distinguished Military Graduate a person who was designated a Distinguished Military Student and who has maintained the high academic standards between the time of such designation and date of commission and graduation.

Selective Service Deferments

Students enrolled in the advanced course, Army ROTC, will be deferred under the provisions of the Universal Military Training and Service Act, as amended, according to the following:

1. The students are required to sign an ROTC deferment agreement. The provisions of the agreement require the students to complete the advanced course and to accept commissions if tendered by the Department of the Army.
2. The Professor of Military Science will notify the local selective service boards of all enrolled students of their selection for deferment. Deferment by the local selective service board is mandatory unless the student has received an order to report for induction.

Students enrolled in the basic course, Army ROTC, may request the Professor of Military Science to select them for deferment. The students are required to sign an ROTC deferment agreement. The provisions of the agreement require the students to complete the basic and advanced courses and accept commissions if tendered by the Department of the Army.

Deferred students dropped from ROTC, not in good scholastic standing, or not considered potential commissioned officers, will no longer be deferred. Students who decline to fulfill the terms of their ROTC deferment agreements pertaining to undergraduate work at the institution will be reported to Selective Service.

Department of Naval Science

CAPTAIN D. A. BARKSDALE, USN

Commanding Officer and Professor of Naval Science

THE NAVAL RESERVE OFFICERS Training Corps is established under authority of Title 10, U. S. Code, as amended.

A Captain in the Navy or a Colonel in the Marine Corps is assigned as the Professor of Naval Science. He is assisted by commissioned officers and others detailed from the Navy and Marine Corps.

The purpose of NROTC is to provide a steady supply of well-educated junior officers for the line and staff corps of the regular Navy and to build up a reserve of trained officers who will be ready to serve their country at a moment's notice in a national emergency. NROTC graduates are given equal rank, equal treatment, and equal opportunities with the graduates of the United States Naval Academy.

Types of NROTC Students

Students in the NROTC are of three types:

1. Regular NROTC students are appointed Midshipman, USNR. Such students assume an obligation to make all required summer practice cruises and upon acceptance of an appointment as a commissioned officer in the U. S. Navy or U. S. Marine Corps serve at the pleasure of the President. The Secretary of the Navy establishes criteria for voluntary termination of an officer's status to meet the needs of the naval service. At the present time the required minimum active duty service period of four years has been established by the Secretary of the Navy.

The Regular program briefly described above is one of the most remarkable educational opportunities ever offered. Public Law 729 (as amended by Public Law 88-647), signed by the President on 13 August 1946, instituted this program for the selection and training of officer candidates for the Navy and Marine Corps in colleges and universities throughout the country. The cost of tuition, fees, and textbooks will be paid by the Government. Necessary uniforms will be provided by the Government and students will receive subsistence pay for other expenses during college at the rate of \$50 per month for a maximum of four years. Active duty pay while on summer training is based on rate of pay for midshipmen of the Naval Academy (approximately \$193 per month at present).

Normally students will attend college for four years. While in college they may take any course leading to a baccalaureate or higher degree which falls within the following general category of majors:

Architecture	Engineering	Mathematics
Biology, General	English	Philosophy
Botany, General	Foreign Languages	Physical Sciences
Building Construction	Geography	Political Science
Business	History	Psychology, General
Computer Science	Interior Design	Sociology
Economics	Industrial Design	Zoology, General
Education, Secondary	Journalism	

In addition to the requirements of their major, NROTC students are required to complete 30 quarter hours of Naval Science and certain Navy-specified

university courses, most of which may be substituted for required or elective courses. Summer quarters are occupied with two at-sea training cruises and one summer period of aviation-amphibious indoctrination, lasting from six to eight weeks each. Upon graduation Regular NROTC students must accept a commission as Ensign, USN, or Second Lieutenant, USMC, if offered.

Entrance to this Regular program described above is effected through the medium of nation-wide competitive examination. The examination is given by the Naval Examining Section during December of each year for selection of NROTC students to enter the Regular program the following Fall. Application blanks for the examination, and information bulletins describing this program, are made available each Fall at high schools, colleges, and Offices of Naval Officer Procurement. For more complete details, contact the Professor of Naval Science of this university.

As required by Section 2107, Title 10, U.S. Code, selected candidates must enlist in the U. S. Naval Reserve for six years in pay grade E-1 (Seaman Recruit) prior to being appointed Midshipman, USNR, and receiving compensation. If you are disenrolled from the NROTC program for reasons beyond your control, you shall upon disenrollment be discharged from your enlisted status. In addition, Regular students may resign from the program without prejudice at any time prior to the beginning of their third year in the program, and they will also be discharged from their enlisted status upon disenrollment.

2. Contract NROTC students have the status of civilians who have entered into a mutual contract with the Navy. If the student successfully completes the requirements for a degree from Auburn University, plus Naval Science and other Navy-specified courses, he may become a commissioned officer in the Navy or Marine Corps Reserve. Contract students are not entitled to the compensation or benefits paid Regular NROTC students, except that they are entitled to a uniform issue, Naval Science textbooks, subsistence pay (\$50 monthly) during their final two years of NROTC training, and summer cruise compensation. If in all respects qualified, they are commissioned as reserve officers in the United States Navy or Marine Corps upon graduation from Auburn University. They are required to serve on active duty for a period of three years and retain their commission for a total of six years from date of appointment (three years active duty, two years ready reserves, and one year standby reserve), unless sooner released by the Secretary of the Navy. Contract students selected as Distinguished Naval Graduates will be offered a commission in the regular Navy. Contract students to be commissioned in the Marine Corps may apply for a commission as Regular Officers and, if accepted under current quotas, will have the same options of service as Regular NROTC students.

Contract students who have not yet qualified by registration for entitlement to the \$50 per month subsistence payments may resign from the NROTC program without prejudice.

Contract students are eligible and encouraged to apply for the Regular program through national competition. In addition, each year the Professor of Naval Science nominates for consideration outstanding Contract students for appointment as Regular NROTC students, such appointment to become effective the following Fall Quarter.

While at Auburn University a Contract student may take any curriculum which leads to a baccalaureate or higher degree. This does not, however, entitle the student to any delay of active duty requirements after attaining the basic requirements for a baccalaureate degree and commissioning. Contract students are required to complete the same Naval Science and Navy-specified university courses as Regular students. They must complete all Naval Science require-

ments prior to or concurrently with receipt of first baccalaureate degree. Summer training will consist of an at-sea training cruise between the junior and senior years. During this training period Contract students will be paid at the same rate as Regular students. Receipt of subsistence pay of \$50 per month during the junior and senior years in the NROTC program is contingent upon fulfilling the following requirement:

Enlist in the U. S. Naval Reserve (inactive) for the standard six-year reserve obligation. Those students already serving under a reserve enlistment contract will be discharged and re-enlisted under provisions of Section 2104 of Title 10 U.S. Code.

The Reserve Officers Training Corps Vitalization Act of 1964 states that though in an enlisted status during the years enrolled in the advanced Contract program, this time cannot be computed for length of service for a commissioned officer.

Junior and senior Contract NROTC students who are disenrolled from the program for reasons beyond their control, or without willfully violating the terms of their contract, will be discharged from their reserve status at the same time, unless they request active duty or retention in the naval reserve.

Contract NROTC students are selected by the Professor of Naval Science prior to the beginning of the Fall Quarter on a basis of demonstrated academic and personal fitness. Applications received prior to September 1st will be considered.

General Qualifications For Enrollment

In general each candidate for enrollment in the NROTC must meet the following requirements:

1. A Regular NROTC student must be an unmarried male citizen of the United States, never have been married, and agree to remain unmarried until commissioned or disenrolled. (Contract NROTC students may be married.)

2. Have attained his 17th birthday on or before July first of the year of enrollment and be of such age that he will not have attained his 25th birthday before July first of the year he will be commissioned. The Professor of Naval Science is authorized to waive the minimum age requirement for Contract students of the freshman class in those cases where he considers the student of sufficient maturity to undertake the Naval Science courses and drills.

3. Be morally qualified and possess officer qualifications and character as evidenced by appearance, scholarship, extracurricular activities, and record in his home community.

4. Be at least a high school graduate or person of equivalent educational level if selected competitively; or be enrolled in good standing or accepted for admission at an NROTC institution if selected by the Professor of Naval Science.

5. Be physically qualified in accordance with the current manual of the Navy Medical Department requirements for entrance into the NROTC program.

Equipment

Uniforms, Naval Science textbooks, and other equipment necessary to the NROTC program will be furnished by the government to Regular and Con-

tract students. The uniform will be worn only when students are engaged in drills, attending Naval Science labs, or during other naval activities prescribed by the Professor of Naval Science.

Selective Service Deferment

1. Regular and Contract students are draft deferred under the Selective Service Extension Act of 1951 from the time of executing their oath of office or contract. This does not remove the legal requirement for all males to register with their local draft board upon reaching age 18.

2. NROTC students dropped from the program become eligible for the draft. Regular students and Advanced-Course Contract students disenrolled from the NROTC program for reasons beyond their control will be discharged from their enlisted status unless they request active duty or retention in the Naval Reserve.

3. The Department of Naval Science will keep the appropriate local draft board informed as to the status of each student under paragraphs 1 and 2 above.

Curriculum

The Naval Science curriculum consists of the following hours per week: Freshman, junior, and senior Naval Science courses consist of five hours per week; sophomore courses three hours per week; and courses for Marine Corps Option students four hours per week.

The Naval Science Subjects carried during the four-year curriculum are listed below.

FIRST YEAR

- 1st Qtr. Principles of Naval Organization and Management (NS 111)
 2nd Qtr. Principles of Naval Organization and Management/Naval Ship Systems (NS 112)
 3rd Qtr. Naval Ship Systems (NS 113)

SECOND YEAR

- 1st Qtr. Seminar: Sea Power and Maritime Affairs (NS 211)
 2nd Qtr. Seminar: Sea Power and Maritime Affairs (NS 212)
 3rd Qtr. Seminar: Sea Power and Maritime Affairs (NS 213)

(U. S. N. Candidates)

THIRD YEAR

- 1st Qtr. Navigation (NS 311)
 2nd Qtr. Navigation/Operations (NS 312)
 3rd Qtr. Naval Operations (NS 313)

FOURTH YEAR

- 1st Qtr. Naval Weapons I (NS 411)
 2nd Qtr. Naval Weapons I/II (NS 412)
 or
 Naval Weapons I/III* (NS 414)
 3rd Qtr. Naval Weapons II (NS 413)
 or
 Naval Weapons III* (NS 415)

*Naval Weapons III will be scheduled by students electing not to complete Calculus. This course is not open to students who complete Calculus.

(U. S. M. C. Candidates)

THIRD YEAR

- 1st Qtr. Evolution of the Art of War (NS 321)
 2nd Qtr. Evolution of the Art of War (NS 322)
 3rd Qtr. Evolution of the Art of War (NS 323)

FOURTH YEAR

- 1st Qtr. Amphibious Warfare Part I (NS 421)
 2nd Qtr. Amphibious Warfare Part II (NS 422)

Each of the above subjects carry three quarter hours of credit with the exception of the sophomore courses which carry one quarter hour of credit and the Marine Corps option courses which carry two quarter hours of credit. These hours of credit will be considered as a part of the normal quarterly load required for NROTC students; however, Auburn University graduation requirements will be increased by 18 hours over the number of hours listed in the University catalog.

Flight and Ground Instruction

A program of flight and ground instruction is offered eligible NROTC students who have completed their sophomore year. The primary purpose of such instruction is to ascertain the student's aptitude for Naval Aviation but it may also enable students to become eligible for a private pilot's license. Flight training under the program is at Government expense and is in addition to the presently prescribed Naval Science curriculum for NROTC students.

Naval Honor Graduates

The Professor of Naval Science may designate as a Naval Honor Graduate any candidate who possesses outstanding qualities of leadership, high moral character, a definite aptitude for the naval service, and who has distinguished himself in his chosen academic major.

In order to qualify for this designation, a candidate must achieve an academic standing in his major field equivalent to "graduation with honor" (grade point average of 2.4 or better) and must also achieve an equivalent standing in aptitude and Naval Science subjects.

Distinguished Naval Graduate Designation

In their senior year, Contract NROTC students meeting the following requirements will be designated as a Distinguished Naval Graduate and tendered a regular Navy appointment:

1. Stand in the top 20 percent of the NROTC program OR stand in the top 10 percent in military aptitude and top 1/3 of the NROTC program.
2. Be physically qualified for appointment in the regular Navy.

The top 15 percent of the total graduates of the Contract NROTC program may be selected as Distinguished Naval Graduates. Selections will be made by a board convened by the Professor of Naval Science.

Department of Air Force Aerospace Studies

(AFROTC)

COLONEL RITCHIE P. STIMPSON

Commandant and Professor of Air Force Aerospace Studies

THE AIR FORCE ROTC was established at Auburn University in the fall of 1946 as the School of Air Science and Tactics. As a result of the ROTC Vitalization Act of 1964, H. R. 9124, the curriculum was revised and the departmental title changed to the School of Air Force Aerospace Studies. During the Fall Quarter, 1967, the title was re-designated Department of Air Force Aerospace Studies. The officer education program under the new legislation is a revitalized effort designed to provide education that will develop skills and attitudes vital to the professional Air Force Officer. It is designed to qualify for commission those college men who desire to serve in the United States Air Force.

The curriculum in Air Force Aerospace Studies is divided into three areas: the General Military Course (Basic), the equivalent Field Training Course, and the Professional Officer Course (Advanced). A description of these courses, requirements for entry, etc., are listed below.

College Scholarship Program

Certain outstanding students may be selected by the Professor of Air Force Aerospace Studies to compete for scholarships under this program.

For students awarded scholarships the Government will pay for the cost of tuition, fees, and textbooks.

Uniforms will be provided by the Government and students will receive a subsistence allowance of \$50.00 per month. Only members of the four-year program or those granted equivalent credit for portions thereof are eligible for AFROTC College Scholarships.

General Military Course

(Basic Course)

The Air Force course of study offered during the student's freshman and sophomore academic years is the General Military Course (GMC) Program. This is composed of one class hour and one Corps Training hour per week. The Corps Training extends beyond drill and ceremonies to include briefings by various Air Force Commands and agencies. Students enrolled in the GMC are provided the opportunity to visit various air bases to more fully acquaint them with operational Air Force units. One credit hour is allowed for each quarter of the six quarter basic course successfully completed. Six quarters of the General Military Course, or its equivalent in Field Training is a requirement for admission to the Professional Officer Course.

Field Training Course

Provisions have been made for students who did not attend the basic course and yet desire to enter the Professional Officer Course. These students, upon application and after acceptance, can attend a Field Training Course at an Air Force Base for six weeks during the summer before entering the Professional Officer Course. This course is an intensified military training program, with classroom work covering the same material contained in the basic course. The students are paid approximately \$170.00 plus their travel pay to and from the base. The Government furnishes uniforms, quarters, medical care, and rations during the training period. Upon successful completion of this course, students are eligible for the Professional Officer Course.

Professional Officer Course

(Advanced Course)

The Professional Officer Course is designed to provide highly qualified Junior Officers for the United States Air Force. Enrollment in the program is based upon such factors as scholarship, physical qualifications, leadership, de-

sire for flying training, and academic major. Successful completion of the course qualifies the student for appointment as a Second Lieutenant in the United States Air Force Reserve.

The program consists of a six-quarter course normally taken during the junior and senior year. Enrollment in the advanced course is also open to graduate students if they have six-quarters of school remaining. Three classroom hours of instruction and one hour of Corps Training are taken per week. Students enrolled in the program are given a \$50.00 per month subsistence allowance. A student selected for the pilot category (1-P) will be given 35 hours of ground instruction and 36½ hours of flight training which may qualify him for a private pilots license.

A four-week field training course must be attended by the advanced student if he has not already completed a six-week course. This summer training is normally completed between the junior and senior years. The Government will furnish uniforms, quarters, rations, and medical care during the training period. Additionally, a student is given travel pay and approximately \$190.00 for attending the field training course.

Professional Officer Course Applicants must:

1. Be a United States citizen.
2. Be physically qualified in accordance with Department of the Air Force standards.
3. Be under 30 years of age at the time of commissioning except that pilot and navigator applicants must not be older than 26½ years when commissioned.
4. Complete six-quarters of GMC, a six weeks field training course, or have equivalent credit in lieu thereof.
5. Pass the Air Force Officer Qualifying Test (AFOQT).
6. Have an academic average of 1.0 or better.
7. Have six-quarters of undergraduate or graduate school remaining.
8. Enlist in the Air Force Reserve for a period of six years or eight years for those in the college scholarship program.
9. Execute a written agreement to complete the Advanced Course and attend one four-week summer training course.
10. Accept a commission as a Second Lieutenant in the USAF Reserve and agree to serve for at least four years if not on flying status or for six years if Pilot or Navigator qualified.
11. Be selected by the Professor of Air Force Aerospace Studies.

Veterans with previous honorable active U.S. military service who desire to enroll in the advanced course may receive a waiver for either the GMC or its equivalent as an entrance requirement. If he meets all other requirements he will be enrolled at the beginning of his junior year. Summer field training may be waived for veterans.

Uniforms and Equipment

All students enrolled in the AFROTC must deposit \$30.00 with the University Bursar. They are then furnished a uniform and other necessary uniform items through the AFROTC Supply Office under the uniform commutation system. Texts and other items required for AFROTC academics are also issued

through the AFROTC Supply Office. Upon completion of the GMC, or upon a students withdrawal, the uniform and all other supplies are turned in and the deposit is then returned to the student. One dollar and fifty cents per quarter is withheld by the University Bursar to cover the cost of cleaning and repair of the uniforms and when applicable, to support AFROTC activities. Uniforms issued to POC members become the property of the member when he is commissioned.

Distinguished AFROTC Graduates

The Professor of Air Force Aerospace Studies may designate as a Distinguished AFROTC Graduate a POC member who:

1. Has a superior academic record and high AFOQT Score.
2. Possesses outstanding qualities of leadership and high moral character.
3. Demonstrates their leadership ability through achievements in recognized campus activities, both curricular and extracurricular, which in conjunction with (1) and (2) above, warrants designation as "DISTINGUISHED."

Description of Courses

This section contains all courses offered in the University, listed by departments, arranged in alphabetical order.

Those courses bearing the numbers 100 to 199, inclusive, are normally offered for freshmen; those from 200 to 299, sophomores; 300 to 399, juniors; 400 to 499, seniors; 500 to 599, fifth year students; 600 to 799, graduate students.

Description of courses in each department includes: (a) course number; (b) descriptive title; (c) in parentheses, credit in quarter hours, i.e. one quarter (5), two quarters (5-5), etc.; (d) lecture and laboratory hours for courses with laboratory (where no statement is made the course consists of lecture periods equal in number to course credit); (e) the quarter in which the course is offered; (f) prerequisite (Pr.); (g) description of subject matter and method.

Preceding the description of courses for each department is a list of the departmental faculty.

INDEX BY FIELDS OF INSTRUCTION

(Departmental symbols in parentheses)

University Courses (U).....	192	Health, Physical Education and Recreation (HPR).....	257
Accounting and Finance (ACF).....	192	History (HY).....	262
Administration and Supervision (AED).....	194	Horticulture (HF).....	265
Aerospace Engineering (AE).....	195	Industrial Engineering (IE).....	268
Aerospace Studies (AF).....	198	Industrial Laboratories (IL).....	271
Agricultural Economics and Rural Sociology (AS).....	199	Interdepartmental Education (IED).....	272
Agricultural Engineering (AN).....	201	Journalism (JM).....	275
Agronomy and Soils (AY).....	203	Laboratory Technology (LT).....	276
Animal Science (AH).....	205	Library (LY).....	276
Architecture (AR).....	207	Management (MN).....	276
Art (AT).....	210	Marketing and Transportation (MT).....	278
Aviation Management (AA).....	212	Materials Engineering (MTL).....	279
Biology (BI).....	214	Mathematics (MH).....	279
Botany and Plant Pathology (BY).....	214	Mechanical Engineering (ME).....	283
Building Technology (BT).....	217	Military Science (MS).....	287
Chemical Engineering (CN).....	218	Music (MU).....	288
Chemistry (CH).....	220	Naval Science (NS).....	292
Civil Engineering (CE).....	223	Nutrition and Foods (NF).....	292
Consumer Affairs (CA).....	227	Pharmacy (PY).....	294
Counselor Education (CED).....	231	Philosophy (PA).....	297
Dairy Science (DH).....	232	Physical Science (PHS).....	299
Economics (EC).....	234	Physics (PS).....	299
Electrical Engineering (EE).....	237	Political Science (PO).....	302
Elementary Education (EED).....	239	Poultry Science (PH).....	305
Engineering Graphics (EG).....	242	Psychology (PG).....	306
English (EH).....	243	Secondary Education (SED).....	309
Family and Child Development (FCD).....	246	Sociology (SY).....	311
Foreign Languages (FL).....	248	Speech (SP).....	312
Forestry (FY).....	251	Textile Engineering (TE).....	316
Foundations of Education (FED).....	254	Theatre (TH).....	317
Geography (GY).....	254	Veterinary Medicine (VM).....	319
Geology (GL).....	256	Vocational and Adult Education (VED).....	325
		Zoology-Entomology (ZY).....	328

University Courses (U)

The following courses, interdisciplinary and experimental in character, are designed to enable the student to see in a wide perspective the relationship of individual courses in his curriculum and to understand more fully the dominant ideas and concepts confronting him in the modern world. University Courses are open to students in all curricula.

400. **Psychological Study of the Community (3).** Lec. 2, Lab. 2. Pr., junior standing and permission of instructor.

Local community programs designed to foster interest in and an understanding of our society. A number of community leaders will be used as speakers and discussion leaders.

422. **Natural Philosophy (3).** Pr., junior standing.

A synthesis of modern thought concerning the unifying ideas of physical and biological sciences and their impact on the social-economic structure of man-made society. Contributions from various sciences are evaluated in light of knowledge of the last part of the twentieth century.

Accounting and Finance (ACF)

Professors Robinson, *Head*, Hartman, Henderson, and Hill

Associate Professors Gritz, D. P. Hale, and Stalnaker

Assistant Professors Beard, Bice, Criss, and Williams

Instructors Becker, Dinius, Whatley, and Woodward

Accounting

211. **Principles of Accounting I (5).** Lec. 3, Lab. 4. Pr., sophomore standing.

A study of basic accounting principles, including the accounting cycle and preparation of financial statements. ACF 211 is not open to students with credit in ACF 215.

212. **Principles of Accounting II (5)** Lec. 3, Lab. 4. Pr., ACF 211.

A continuation of accounting principles with emphasis on their application to partnerships, corporations, and preparation and analysis of various financial statements.

215. **Fundamentals of General and Cost Accounting (5).** Lec. 3, Lab. 4. Pr., sophomore standing.

The fundamental concepts and principles of general and cost accounting with emphasis on accumulating, reporting, and interpreting cost data in the production area of business operations. (Not open to undergraduates majoring in BA. Credit in ACF 211 excludes credit for ACF 215.)

310. **Financial Accounting and Control (5).** Pr., ACF 212.

The third course for accounting majors or a terminal course for non-accounting majors. Introductory cost accounting and budgeting with some emphasis on distribution costs and managerial accounting problems. ACF 310 and 311 may be taken independently or concurrently; both are prerequisites for ACF 312.

311. **Intermediate Accounting I (5).** Lec. 3, Lab. 4. Pr., ACF 212.

A comprehensive study of accounting principles and theory, including a review of the accounting cycle and accounting for current assets, current liabilities, and investments. ACF 310 and 311 may be taken independently or concurrently; both are prerequisites for ACF 312.

312. **Intermediate Accounting II (5).** Lec. 3, Lab. 4. Pr., ACF 310 and 311.

A continuation of accounting principles and theory, with emphasis on accounting for fixed assets, intangibles, long term liabilities, corporate capital structure, and analysis of financial statements.

314. **Income Tax Accounting (5).** Pr., ACF 212.

Interpretation of the regulations, preparation of returns, and the keeping of accounting records for tax purposes will be considered in this course.

410. **Cost Accounting (5).** Lec. 2, Lab. 6. Pr., ACF 312 and junior standing.

Accounting principles and procedures involved in job-lot, process, and standard cost accounting.

414. **Advanced Income Tax Accounting (5).** Pr., ACF 312, 314, and junior standing.

Special tax accounting problems of individuals, partnerships, corporations, estates, and trusts. Extensive use will be made of a tax service program.

416. **Auditing (5).** Pr., ACF 312, and junior standing.

The principles of auditing with particular attention to methods of testing, analyzing, and summarizing accounting records.

417. **Advanced Accounting (5).** Lec. 2, Lab. 6. Pr., ACF 312 and junior standing.

A study of specialized accounting problems, including partnerships, joint ventures, installment sales, consignments, receiverships, and estates and trusts.

418. **Accounting for Business Consolidations (5).** Lec. 2, Lab. 6. Pr., ACF 312 and junior standing.

Accounting for home and branch office procedures, business combinations, parent and subsidiary operations, and preparation of consolidated statements.

419. **Governmental Accounting (5). Pr., ACF 312 and junior standing.**
Budgeting and accounting procedures of governmental divisions.

GRADUATE COURSES

610. **Managerial Accounting (5). Pr., ACF 212 and graduate standing or consent of instructor.**
Primarily non-technical, for the student who will be confronted with business problems requiring a comprehensive understanding of accounting concepts, and the accepted methods of applying these concepts in decision-making, planning, and control.
611. **Advanced Accounting Theory (5). Pr., ACF 312 and graduate standing or consent of instructor.**
A review of the origin and development of double-entry accounting; followed by a critical study of the theory of modern accounting principles and procedures.
614. **Financial Information Systems (5). Pr., graduate standing and consent of instructor.**
Identification, evaluation, and modification of critical information flows into efficient and effective information systems to service modern management decision needs.
616. **Advanced Auditing (5). Pr., ACF 416 and graduate standing or consent of instructor.**
Application of auditing principles and procedures to practical problems encountered in the field of public and private accounting.
617. **Advanced Accounting Problems (5). Pr., ACF 417 and graduate standing or consent of instructor.**
An extension to and a consolidation of all the other advanced accounting courses. Preparation for special accounting examination.
650. **Seminar (1-10). Pr., Graduate standing or consent of instructor.**
For those students engaged in intensive study and analysis of accounting and finance problems.
690. **Special Problems (1-15).**
Variable content in the accounting and finance areas.
699. **Research and Thesis. Credit to be arranged.**

Finance

320. **Risk and Insurance (5). Pr., EC 200 and junior standing.**
Essentials of risk management, with the emphasis on the use of insurance in meeting these risks; including the characteristics of property, liability, life and health insurance.
321. **Property Insurance (5). Pr., EC 200 and junior standing.**
The principles, uses and types of insurance with particular emphasis on fire, marine, automobile, and casualty lines.
322. **Life Insurance (5). Pr., EC 200 and junior standing.**
The organization of the life insurance business and the various types of contracts.
323. **Real Estate (5). Pr., EC 200 and junior standing.**
The fundamental principles and practices as applied to the purchase, sale, lease, mortgage, title, and management of real estate.
340. **Personal Finance (3). General elective. Pr., junior standing.**
Plans for managing personal financial problems involving insurance, housing, household budgeting, investments, personal and bank loans, credit and time buying, etc.
361. **Principles of Business Finance (5). Pr., EC 202 and ACF 212.**
The first course in Business Finance with emphasis on short-term, intermediate and long-term financing of business firms.
363. **Advanced Business Finance (5). Pr., ACF 361.**
A continuation of ACF 361 with emphasis on capital budgeting, cost of capital, growth, promotion, and reorganization.
367. **Money Markets and Financial Institutions (5). Pr., ACF 212, EC 202 and junior standing.**
A study of the structure and operation of commercial banks and other financial institutions and their role in the financing of business.
464. **Investments (5). Pr., ACF 361, junior standing.**
Individual investment policies, investment institutions, and types of investments available.
466. **Security Analysis (5). Pr., ACF 464 and junior standing.**
An advanced study of the techniques and principles of critical analysis and interpretation of corporate reports. Analysis of earnings, growth, timing and portfolio management. Funds and institutional policies are critically examined.
467. **Cases and Problems in Business Finance (5). Pr., ACF 363 and junior standing.**
A course emphasizing decision making and problem solving within the financial framework. The effect of financial decisions upon the total firm from a short and long range point of view.

GRADUATE COURSES

650. **Seminar (1-10). Pr., Graduate standing or consent of instructor.**
For those students engaged in intensive study and analysis of accounting and finance problems.

663. **Advanced Corporation Finance (5). Pr., ACF 361.**
Intensive study of theory and problems of business finance from a decision making, internal, problem-solving point of view.
690. **Special Problems (1-15).**
Variable content in the accounting and finance areas.

Administration and Supervision (AED)

Professors Saunders, *Acting Head*, and Pierce
Associate Professors Jordan, Moore, Morgan, Tincher, and Walden
Assistant Professors Atwell, Clark, Preus, and Watkins

Prerequisites and corequisites in the Department of Administration and Supervision are: experience in teaching or appropriate fields, employment or definite professional objectives leading to employment in administration or supervision; and AED 681 or equivalent as a prerequisite or corequisite to advanced study in any of the specialized areas.

618. **Organization and Administration of Higher Education (5). Pr., IED 663 or IED 665, or permission of the instructor.**
For educational leaders in higher education. The organization, administration, and evaluation of institutions in higher education in terms of the academic program, student personnel services, business affairs, and related programs including relationships between higher education and the state and federal government.
645. **Current Problems and Issues in Educational Administration (5).**
The problems, issues, and trends affecting educational institutions with particular attention to development of administrative procedures to cope with the extensive changes occurring in education.
646. **Studies in Education (1-3). Pr., one quarter of graduate study and departmental approval.**
A special problem in administration, supervision, guidance, or higher education using research techniques. (Credit in ED 651 prior to 1960 excludes credit for this course.)
650. **Seminar in Area of Specialization (1-5). Pr., permission of the instructor.**
Advanced graduate students and professors pursue cooperatively selected concepts and theoretical formulations.
651. **Internship in Area of Specialization (1-15). Pr., permission of the instructor; may be repeated for a total of not more than 15 credits.**
Provides advanced graduate students with full-time, supervised, on-the-job experiences in a school, college, or other appropriate setting. These experiences are accompanied by regularly scheduled, on-campus discussion periods, designed to provide positive evaluation and analysis of the field experience.
659. **Practicum in Area of Specialization. (Credit to be arranged.) No more than 10 hours of practicum credit may be earned at Master's Level. Pr., permission of major professor.**
Provides advanced graduate students with supervised experiences with emphasis on the application of concepts, principles, and skills acquired in previous course work.
670. **Fundamentals of Supervision (5).**
The supervisory process including such topics as the theoretical framework in which supervision takes place; the purpose, functions and processes of supervision; supervisory tasks and skills; and the methods of evaluating supervision.
681. **Organization and Administration of Public Education (5).**
For superintendents, principals, teachers and other educational leaders. Topics include purposes of organization and administration; organization and administration on federal, state, and local levels; financial support and accounting; operation of plant; school-community interaction, and personnel administration.
683. **The Leadership Role in Educational Administration (5).**
Current theories, concepts and principles of leadership and their application to education. Further emphasis placed on the responsibility of the educational administrator for leadership in the school and community, in the continuous improvement of staff competence and principles, and in evaluation of effective leadership.
685. **Administrative Organization and Behavior (5).**
Current theories and concepts of formal organization and of collective behavior. Includes a social-psychological approach to organizations, and treats current trends in organizing for instruction.
686. **Administration and Policy Formation (5).**
Analysis of basic social forces, antecedent movements, and political action leading to formal enactment of educational policy at national, state, and local levels. Consideration is given to the roles and functions of governing and regulating boards and agencies.
688. **School Finance and Business Administration (5).**
Relationships between educational finance, educational program, tax structures, foundation programs and internal accounting. Theories of public finance and economic principles relating to financial support of educational systems at the local, state and federal levels.

689. **Educational Plant Maintenance (5).**
Relationship of educational plant maintenance and operation to educational program; procedures in educational plant maintenance and operation; safety factors; trends in modernization and new plant planning.
690. **Educational Business Management (5).**
Procedures and practices in educational finance at the business or operational level. Attention to budgeting, accounting, purchasing, transportation, cost analysis, and management of human and material resources.
691. **Educational Plant Planning (5).**
Development of educational plants; relationships between curriculum and plant; trends in plant design; analysis of physical conditions, relationships of professional and lay personnel in educational plant planning.
692. **Constitutional, Statutory and Judicial Foundations of Education (5).**
The constitutional and statutory provisions for education and an analysis of judicial decisions affecting education. Among topics are authority and responsibility of the teacher; rights, privileges and responsibilities of students; use of school property, taxation; curriculum, contracts and retirement provisions; contractual capacity and liability, and transportation.
693. **Personnel Administration (5).**
Assists educational leaders with effective personnel administration and the quality of education. Research results and experimentation in morale, welfare, work loads, pupil accounting, and bases for salary determination as they relate to staff and pupil personnel.
694. **Studies for Comprehensive Educational Planning (5).**
Principles and procedures for collecting, analyzing, and utilizing data in the process of educational planning, including such topics as: community characteristics, including power structure; economic bases and population; system characteristics, including administrative organization, finance, personnel, physical facilities; and instructional program.
697. **Student Personnel Work in Higher Education (5). Pr., CED 621.**
Theories, principles, practices, organization, administration, and evaluation of student personnel services in higher education.
699. **Research and Thesis (Credit to be arranged).** May be taken more than one quarter.
798. **Research and Thesis (5).**
799. **Research and Dissertation (Credit to be arranged).**

Aerospace Engineering (AE)

Professors Pitts, *Head*, Martin, and Sforzini

Associate Professors Bennett, Cutchins, Drummond, Harwell, and Sherling

Assistant Professors Burkhalter, Nichols, and Pell

Instructors Cochran, Culberson, and Foster

203. **Aerospace Fundamentals (3). Lec. 2, Lab. 3. Pr., EG 106.**
Aerospace concepts and terminology. General schemes and designs of aerospace systems and applications of computers to same. Duplicate credit will not be given for AE 203 and IE 205 or similar courses which include FORTRAN programming instruction.
300. **Aerospace Analysis I (3). Pr., MH 265.**
Special methods and notations used in Aerospace Engineering.
302. **Airloads (4). Lec. 3, Lab. 3. Pr., ME 340.**
Application of the basic equations of fluid dynamics to the prediction of pressure distribution, wing loading and hinge moments. Propeller design and selection.
303. **Theoretical Aerodynamics I (3). Pr., ME 340 and AE 300.**
Fundamental analysis of aerodynamics, potential flow theory. Correlation of potential flow theory with experimental results.
304. **Theoretical Aerodynamics II (4). Lec. 3, Lab. 3. Pr., AE 303.**
Fundamental principles of compressible flow including subsonic, transonic, supersonic, and hypersonic aerodynamics. High speed wind tunnels and laboratory techniques.
305. **Flight Performance (2). Pr., AE 302.**
Equations of motion and solution techniques for vehicle performance analysis including effects of propulsion system and aerodynamic variations.
307. **Aerospace Structures I (5). Lec. 4, Lab. 3. Pr., ME 207.**
Basic structural analysis. Shear and bending in monocoque structures. Deflections of beams and frames. Column and plate buckling. The laboratory portion is devoted to experimental techniques in stress analysis.
310. **Aerospace Analysis II (4). Pr., AE 300, ME 321.**
Linear and non-linear systems, linearization procedures, and linear systems analysis techniques. Transfer functions and stability criteria for some aerospace systems and components. Other special techniques as required by advanced courses.
311. **Aerospace Materials and Methods of Construction (2). Pr., ME 202 and junior standing.**
Nomenclature, coding systems, physical and structural properties, applications and fabrication techniques as applied to aerospace materials.

326. **Fundamentals of Aerospace Dynamics (3).** Pr., AE 302, AE 307, AE 310 and junior standing.
Dynamics of aerospace vehicles in moving reference frames; Eulerian formulation for the vehicle as a rigid body; Lagrangian formulation and small oscillation theory. Provides a unified basis for further studies in aircraft vibration, flight dynamics, and space flight mechanics.
335. **Rotary Wing Aerodynamics (3).** Pr., AE 304, AE 305.
Aerodynamics and flight characteristics of the rotary wing as applied to helicopters and V/STOL flight vehicles.
400. **Viscous Aerodynamics (4).** Lec. 3, Lab. 3. Pr., AE 304 and junior standing.
Theoretical background essential to a fundamental understanding of laminar and turbulent boundary layers and their relations to skin friction and heat transfer. Experimental techniques.
401. **Aeronautical Problems I (1).** Lab. 3. Pr., senior standing.
Investigation of current aeronautical problems; preparation and presentation of technical papers and reports.
402. **Aeronautical Problems II (1).** Lab. 3. Pr., AE 401.
Continuation of AE 401.
409. **Aerospace Structures II (5).** Lec. 4, Lab. 3. Pr., AE 203 or IE 205 or equivalent knowledge of Fortran programming, AE 307, AE 310.
A continuation of AE 307. An introduction to the finite element method. The laboratory portion is devoted to the solution of structural problems on the digital computer.
414. **Equilibrium Gas Dynamics (3).** Pr., permission of instructor and junior standing.
Basic concepts of The Equilibrium Kinetic Theory and the equilibrium real gas properties. Aero-thermodynamic fundamentals of external flows for various atmospheric flight conditions in terms of flight speeds, altitudes and vehicle geometry.
415. **Jet Propulsion (5).** Pr., junior standing, AE 304.
Internal aerodynamics and thermodynamics of rockets and air-breathing jet engines. Jet nozzles. Detailed analysis of flow through turbojet compressors, combustors and turbines.
416. **Rocket Propulsion I (3).** Pr., AE 415 and junior standing.
Detailed analysis of the thermodynamics, aerodynamics, and design of liquid propulsion rockets.
417. **Rocket Propulsion II (3).** Pr., AE 415 and junior standing.
Design and performance analysis of solid propellant rocket motors with emphasis on internal ballistics.
420. **Flight Vehicle Stress Analysis I (3).** Pr., junior standing and AE 409.
Computer techniques applied to the analysis of flight vehicle structures.
421. **Flight Vehicle Stress Analysis II (3).** Pr., junior standing and AE 409.
Stress analysis of pressure chambers and vessels encountered in aerospace applications.
424. **Nonequilibrium Gas Dynamics (3).** Pr., permission of instructor and junior standing.
Nonequilibrium Kinetic Theory of real atmospheric gases. Applications of the thermal and chemical nonequilibrium conditions to the external flows for various flight conditions.
428. **Space Propulsion Systems (5).** Pr., junior standing and AE 415.
Introduction to reaction engines for use in outer space vehicles. Environment of outer space, power requirements for space missions, introduction to relativistic mechanics, nuclear power systems, particle generators, magnetohydrodynamics, plasma accelerators and photonic engines.
429. **Aircraft Vibration and Flutter (3).** Pr., AE 326, AE 409 and junior standing.
Free, forced, and damped vibration of single and multiple degree-of-freedom systems; introduction to vibration of continuous systems; introduction to flutter theory; applications in aerospace.
432. **Astrodynamics I (3).** Pr., AE 326 or permission of instructor, junior standing.
Geometry of the solar system, detailed analysis of two-body dynamics and introduction to artificial satellite orbits; Hohmann transfer and patched conics for lunar and interplanetary trajectories. Elements of orbit determination.
433. **Astrodynamics II (3).** Pr., AE 432 and junior standing.
Elements of special and general perturbation theory; n-body formulation and introduction to 3-body problem; introduction to powered flight analysis and space flight guidance.
434. **Aerospace Systems Analysis (3).** Pr., AE 429 or AE 441 or AE 432 and junior standing.
Modeling of system elements, analysis of systems undergoing various motions connected with flight, and techniques of optimization of the system.
435. **Elements of V/STOL Flight (3).** Pr., AE 335, AE 400 or permission of instructor, junior standing.
The analysis of methods for generating high lift at low vehicle forward speeds. Physical flaps, jet flaps, ducted propellers, wing in propeller slipstream, boundary layer control, thrust augmentation and jet deflection.
439. **Static Stability and Control (3).** Lec. 2, Lab. 3. Pr., AE 304, AE 305.
Introduction to static stability and control of flight vehicles including laboratory techniques for determination of stability parameters.

441. **Dynamic Stability and Control (3).** Pr., AE 326, AE 439 and junior standing. Longitudinal and lateral dynamics of aircraft. Response to actuation of controls. Attitude dynamics of spacecraft. Emphasis on design considerations of various vehicles.
442. **Automatic Stability and Control (3).** Pr., AE 441 and junior standing. Introduction to principles and techniques of automatic control of aircraft and missiles. Effects on design variables.
445. **Missile Aerodynamics (3).** Pr., AE 400, AE 439 and junior standing. The aerodynamics of slender wing-body configurations for the low supersonic, moderate hypersonic and Newtonian continuum flow regimes. Linear and non-linear effects are considered as well as interference effects. Application to missile performance and stability for certain flight profiles.
448. **Aerospace Design I (1).** Lab. 3. Pr., AE 311. The design process oriented toward the aerospace field with emphasis on the development of creative thinking and team effort. A two quarter sequence with AE 449. Either AE 448 or 449 may be taken first but they may not be taken concurrently.
449. **Aerospace Design II (1).** Lab. 3. Pr., AE 311. The design process oriented toward the aerospace field with emphasis on the development of creative thinking and team effort. A two quarter sequence with AE 448. Either AE 448 or 449 may be taken first but they may not be taken concurrently.

GRADUATE COURSES

601. **Advanced Supersonic Aerodynamics (5).** Pr., AE 400. A continuation of AE 400 High Speed Aerodynamics. Consists of a rigorous development of linearized and nonlinearized compressible fluid flow and application. Lifting surfaces, lifting bodies, duct flow and boundary layer effects.
602. **Advanced Elements of High Speed Aerodynamics (5).** Pr., AE 601 or equivalent. A continuation of AE 601 to include three-dimensional wing theory; slender body theory and similarity laws for subsonic, supersonic and hypersonic flow conditions.
603. **High-Speed Viscous Aerodynamics (5).** Pr., AE 602 or equivalent. A continuation of AE 602 to include effects of conductivity and viscosity on aerodynamic properties.
605. **Aeroelasticity (3-5 hours credit to be arranged).** Pr., AE 429. May be taken more than one quarter, not to exceed 10 hours. General formulation of aeroelastic problems, buffeting, flutter and loss of control, dynamic stresses.
608. **Aerospace Structural Dynamics (3-5 hours credit to be arranged).** Pr., AE 429. Advanced theory of matrix structural analysis with applications to dynamics of flight.
609. **Advanced Aero-Structures (3).** Pr., AE 429. Vibrations of solids and wave propagation, introduction to general methodology and thermodynamics of solids, derivation of large-deflection equations, principles of basic solids investigations, and application to aerospace structures.
610. **Advanced Vibrations Phenomena (3-5 hours credit to be arranged).** Pr., AE 429. Aerospace applications of dynamic phenomena measurement including linear varying differential transformers, piezoelectric accelerometers, dynamic force gages, and strain gages. On line use of hybrid and digital computers for data analysis and combined experimental simulation involving both experiment and computer. Use of various types of shakers in dynamic tests.
611. **Thrust Generation (5).** Pr., AE 415. Aerothermodynamics of compressible flow, chemical propellant characteristics, heat transfer in fluid flow, nuclear propulsion.
612. **Aerothermochemistry of Propulsion (3-5 credit hours to be arranged).** Pr., AE 611 or permission of instructor. Selected topics emphasizing interrelation between internal aerodynamics and combustion phenomena in air-breathing jet engines and rockets. Various techniques of establishing equilibrium composition and flame temperatures; comparison of frozen and equilibrium flow in nozzles; effects of condensed phases; supersonic combustion.
613. **Advanced Air-Breathing Propulsion (3-5 credit hours to be arranged).** Pr., AE 611 or permission of instructor. Selected topics emphasizing interaction between external aerodynamics and performance of air-breathing jet engines, boundary layer effects in diffusers and compressors, and detailed analysis of various techniques of minimizing detrimental effects, compressor and turbine matching in turbojets, cascade aerodynamics, and variable area jet nozzles.
615. **Hypersonic Flow Theory (3-5 hours credit to be arranged).** Pr., AE 400, Coreq., MH 461. May be taken more than one quarter, not to exceed 15 hours. Hypersonic continuum theory, governing equations of motion for two and three dimensional flows, hypersonic small disturbance theory, viscous effects. Real gas effects in gas dynamics and rarefied gas flows, basic heat transfer concepts.
616. **Real Gas Dynamics (3-5 hours credit to be arranged).** Pr., permission of instructor. May be taken more than one quarter, not to exceed 15 hours. A microscopic approach to the study of gas dynamics based on quantum mechanical models and statistical techniques.

617. **Molecular Theory of Aerodynamics (3-5 hours credit to be arranged).** Pr., permission of instructor. May be taken more than one quarter, not to exceed 15 hours.
Free molecular, near-free-molecular, and transition flows of neutral gases are considered. Basic equations are developed and selected geometries are treated in detail.
619. **Dynamics of Flight (5).** Pr., AE 441 or permission of instructor.
Small-disturbance theory and the linearized solutions of the general equations of unsteady motions, aerodynamic derivative, derivatives analysis, aerodynamic transfer functions, dynamic stability of uncontrolled longitudinal and lateral motions, solutions of the dynamic stability problems by electronic computing devices, inverse problem, automatic stability and control.
620. **Flight Dynamics of Hypervelocity Vehicles (3-5 hours credit to be arranged).** Pr., permission of instructor. May be taken more than one quarter, not to exceed 15 hours.
Flight dynamics of steady and unsteady flight at hypersonic speeds, great-circle and minor-circle flight, re-entry, stability derivatives in hypersonic flow. Linearization of equations is investigated; static stability problems of hypervelocity vehicles are discussed.
632. **Advanced Astrodynamics (3-5 credit hours to be arranged).** Pr., AE 433 or permission of instructor. May be taken more than one quarter, not to exceed 15 hours.
Selected topics from indirect and direct methods of trajectory optimization, trajectory isolation techniques, special and general perturbation theory, oblate earth problem, three body problem, mission analysis methods, and new research developments.
635. **Ion and Plasma Propulsion (5).** Pr., permission of instructor.
Basic physical and gas dynamic processes underlying methods for electrical acceleration of ionized gas flows appropriate to electrothermal propulsion, electrostatic propulsion, electromagnetic propulsion.
639. **Particle Kinetics of Plasmas (3-5 hours credit to be arranged).** Pr., permission of instructor. May be taken more than one quarter, not to exceed 15 hours.
Gaseous plasmas based on the theory of individual particle kinetics. Emphasis will be placed on the development of basic concepts with sufficient generality to allow treatment of non equilibrium problems of interest in aerospace research.
640. **Magneto-Gas Dynamics (5).** Pr., permission of instructor.
Review of electrodynamics, Maxwell stresses, field and momentum-energy tensors. Thermodynamics of fluids in electromagnetic fields. Equations of motion of a conducting gas. Discussion of typical flow problems. Consideration of microscopic aspects of plasma flows.
645. **Shock Tube Theory and Techniques (5).** Pr., permission of instructor.
Shock wave theory in real and perfect gases, expansion wave theory, reflected shock wave theory. Basic shock tube equations; effects of area change, driver types and characteristics. Non-ideal behavior in shock tubes, diaphragm opening effects, boundary layer effects, shock wave attenuation. Testing time derivation. Shock tube techniques and measurements.
646. **Plasma Diagnostics (3-5 hours credit to be arranged).** Pr., permission of instructor. May be taken more than one quarter, not to exceed 15 hours.
Theoretical and applied studies of techniques for the measurement of plasma properties. The application of these techniques to aerospace research and testing.
690. **Seminar.** Credit to be arranged. May be taken more than one quarter.
Provides weekly lectures on current developments in aerospace sciences by staff members, graduate students, and visiting scientists and engineers.
691. **Directed Reading in Aerospace Engineering.** (Credit to be arranged, not exceeding 5 hours.) May be taken more than one quarter.
699. **Research and Thesis.** (Credit to be arranged.) May be taken more than one quarter.
799. **Research and Dissertation.** (Credit to be arranged.) May be taken more than one quarter.

Aerospace Studies (AF)

101. **General Military Course (I).** Lec. 1, Lab. 1.
An examination of the Department of Defense organizational structure with emphasis on the United States Air Force.
102. **General Military Course (I).** Lec. 1, Lab. 1.
Strategic offensive and Strategic defense force.
103. **General Military Course (I).** Lec. 1, Lab. 1.
The mission, organization and function of United States General purposes forces.
201. **U.S. Aerospace Support Forces (I).** Lec. 1, Lab. 1.
Mission, organization and function of U.S. Air Force support commands.
202. **Trends and Implication in the Pursuit of Peace (I).** Lec. 1, Lab. 1.
The fundamental conflicts between democracy and communism and the nature and contempt of limited war.

203. **World Military Alliances (1). Lec. 1, Lab. 1.**
An inquiry into world alliances and collective security and an inquiry into the policies and strategies of the Soviet Union and China.
301. **Growth and Development of Aerospace Power (3). Lec. 3, Lab. 1.**
Communicative techniques utilized by students in the POC and the development of air-power from the beginning of manned flight to 1961.
302. **Growth and Development of Aerospace Power (3). Lec. 3, Lab. 1.**
Concepts, doctrine and employment of aerospace forces from late 1950s to the present, and an introduction to officer career development.
303. **Astronautics and Space Operations (3). Lec. 3, Lab. 1.**
The background and importance of space programs, vehicle systems and space operations.
401. **Military Leadership and Discipline (3). Lec. 3, Lab. 1.**
The need for Air Force leadership and for discipline in the military.
402. **Leadership and Management Skills (3). Lec. 3, Lab. 1.**
The variables affecting leadership and an introduction to military management to include planning and organizing.
403. **Military Management and Pre-Commissioning (3). Lec. 3, Lab. 1.**
Continuation of military management to include coordination, directing, and controlling; and pre-commissioning.

Agricultural Economics and Rural Sociology (AS) (RSY)

Professors Yeager, *Head*, Blackstone, Danner, White, and Wilson
Associate Professors Bell, Dunkelberger, and Stallings
Assistant Professors Clonts, McCoy, and Vanlandingham

Agricultural Economics (AS)

202. **Agricultural Economics (5). All quarters.**
Economic principles in changes and trends in farm-related production, marketing, prices, consumption, taxation, credit, finance, public policies, tenure, etc., and with utilization of land, labor, and capital.
301. **Agricultural Marketing (5). Pr., AS 202 or EC 200.**
Principles and problems in marketing farm products. Analysis of marketing functions, services, and costs; reducing costs and improving marketing efficiency. Marketing methods and distribution channels of major farm commodities. Market institutions and operation.
302. **Farm Records (3). Pr., AS 202 or EC 200.**
Farm records and accounts and their uses. Kinds and systems of records and accounts adapted to use on farms.
303. **Agricultural Cooperatives (3). Pr., AS 202.**
Principles and problems of organizing and operating farmers' cooperative buying and selling associations.
304. **Agricultural Finance (3). Pr., AS 202.**
Economic problems and policies in financing agriculture.
305. **Farm Appraisal (3). Pr., AS 202.**
The theory of land values; techniques on farm land and building appraisals for different purposes; relationships of land use, soils, crops, forestry management, buildings, land titles, farm prices, taxes, and interest rates to land values; actual appraisals of selected farms; evaluation of appraisal methods and forms currently in use.
401. **Farm Management (5). Pr., AS 202 or EC 200 and junior standing.**
Principles and problems in acquiring, organizing, and operating a successful farm business. Formation and integration of family and farm business goals.
403. **Agricultural Prices (3). Pr., AS 202 or EC 200 and junior standing.**
Principles and factors in the pricing process with special reference to agricultural products and markets. Functions of prices and principles of supply and demand in price determination.
405. **Agricultural Policy (3). Pr., AS 202 or EC 200 and junior standing.**
Concepts, objectives and operation of public policies affecting agriculture. Development of agricultural policies in the United States.
409. **Land Economics (5). Pr., AS 202 or EC 200 and junior standing.**
Principal economic and institutional factors affecting man and his use of land. Supply, demand, and future requirements for land. Property rights, land use planning, zoning, taxation and other social controls affecting land utilization.
410. **Agricultural Business Management (3). Pr., AS 202 or EC 200 and junior standing.**
Principles and problems involved in acquiring, organizing and operating successful agricultural businesses, capital requirements for selected agricultural businesses, factors affecting location and growth, and measures of technical and economic efficiency in organization and operation; practices involved in buying, pricing, and merchandising; management problems and policies in financing, personnel, and public relations.

411. **Economic Development of Rural Resources (3).** Pr., AS 202 and junior standing. Theoretical and empirical study of economic growth and development; problems of undeveloped and underdeveloped areas; role of agriculture in a developing economy; examination of the policies and programs for effective economic growth and development.
412. **Economic Aspects of Water Resources Management (5).** Pr., junior standing. The supply, demand, and use of water resources including economic, legal, and political dimensions. Economics of management of water resource use and conservation in terms of present and future supplies and needs. Both public and private water resources will be considered.
420. **Cooperation in Agriculture (3).** Lec. 4. Pr., graduate standing or consent of instructor. Includes cooperative and economic theory as well as economic and legal aspects of cooperatives.
460. **Introduction to Econometrics (5).** Pr., MH 161 or equivalent, EC 274 or equivalent, and AS 202 or equivalent, and junior standing. Formulation of elementary economic models using economic theory and mathematics with certain basic assumptions or axioms. Mathematical tools used in economic analysis.
480. **Agricultural Commodity Marketing. A. Livestock, B. Dairy, C. Poultry, D. Crops Marketing (3).** Pr., AS 202 or EC 200 and junior standing. May be taken up to a maximum of 12 hours but work may not be repeated in any one area. Economic analysis of market movement and pricing, functional analysis, and institutional aspects of marketing major products in each category.
490. **Senior Seminar (1).** Lec. 1. Pr., senior standing. Current developments in Agricultural Economics; the role of Agricultural Economics in the general economy.

GRADUATE COURSES

601. **Advanced Farm Management (5).** Advanced theory and application of farm management principles and other economic concepts in agriculture. Organization, operation, and management of various types of farms. Optimum utilization of available resources on individual farms.
602. **Advanced Agricultural Prices (5).** Pr., EC 274. Methods of price analysis, separation of fluctuations from price trends, measurement of changes in supply and demand of farm products. Prices, price trends, price cycles, and other price structures.
603. **Advanced Land Economics (5).** Man and his use of land as related to institutional factors. Economics of natural resource use, economic feasibility, benefit-cost analysis, economics of environmental control, and factors related to rural and urban land use.
605. **Advanced Agricultural Marketing (5).** Theory of marketing with emphasis on its application to methods used and problems faced in marketing farm products. Objectives in agricultural marketing.
606. **Agricultural Market Organization (5).** Pr., EC 451. The theoretical approach to marketing problems characterized by imperfectly competitive structures and multiple markets separated by time, space, and form attributes. Theory of interregional trade and location of economic activity. Efficiency of firms and product movement.
608. **Economics of Agricultural Production (5).** Pr., EC 451. Resource allocation and efficiency of production. Production and efficiency in the firm, between firms, and between agriculture and other industries. Influences on agricultural resource allocation and efficiency of risk and uncertainty including price instability, institutional changes, technological advances, imperfect knowledge of production methods, and variations in the human element with emphasis on the role of management.
609. **Dynamics of Agricultural Production and Management (5).** Pr., AS 608. Dynamics of resource allocation and efficiency of production as influenced by price, institutional, and technological changes. Imperfect knowledge and the human element in management.
616. **Resource Economics, Policies and Programs (5).** Impact of resource development on regional economic growth. Effect of taxation and tax policies. Interaction between technological change, resource use, and economic growth. Analysis of current policies and programs.
620. **Directed Readings in Regional Planning (5).** Pr., consent of instructor. Assigned readings and pursuant discussions on delineation of economic areas, resource use and allocation, economic regions, watershed development, planning legislation, zoning, housing, land use restrictions, conservation, and recreation.
621. **Regional Planning Analysis (5).** Theories of regions and problems of multi-jurisdictional planning. Analysis of metro-area and regional planning by states. Comprehensive planning by agencies such as TVA, Corps of Engineers, BOR, and Appalachian Commission. Regional planning and intergovernmental relations.
651. **Farm Organization and Management (3).** Lec. 4. Pr., graduate standing. Formation and integration of family and farm business goals; acquisition, organization, operation and management of successful farm businesses; organization and management of efficient farm units. (Credit for both AS 651 and AS 601 may not be used to meet requirements for the Master's degree.)

652. **Agricultural Prices and Marketing (3). Lec. 4. Pr., graduate standing.**
Principles and problems in marketing agricultural products. Objectives in agricultural marketing. Factors involved in the pricing process of agricultural products and markets. (Credit for both AS 652 and AS 602 may not be used to meet requirements for the Master's degree.)
653. **Public Policy in Agriculture (3). Lec. 4. Pr., graduate standing.**
Concepts, objectives, and operation of public policies affecting agriculture; development of agricultural policies in the United States; alternative methods of dealing with farm problems and opportunities at national, state, and local levels.
670. **Research Methods in Agricultural Economics and Rural Sociology (3). Pr., graduate standing and consent of instructor. (Credit for AS 670 excludes credit for RSY 670.)**
680. **Special Problems in Agricultural Economics. Credit to be arranged.**
690. **Seminar (1-1-1). Fall, Winter, Spring.**
699. **Research and Thesis. Credit to be arranged.**

Rural Sociology (RSY)

361. **Rural Sociology (5).**
The basic sociological concepts and principles as applied to life in the rural community. Special attention given to the culture, social organization, and social problems of rural people in the United States, and in the South in particular. Credit not allowed in this course and SY 201.
362. **Community Organization (5). General elective.**
Understanding the principles of community organization and effective citizenship. Survey of institutions, organizations, and agencies interacting to meet community needs.
370. **Methods of Social Research (5). Pr., RSY 361 or SY 201.**
The principal methods of data collection and analysis in sociological research. Same course as SY 370. Credit in AS 370 excludes credit in SY 370.
441. **History and Philosophy of Extension (3). Lec. 4. Pr., junior standing.**
The Cooperative Extension Service as an educational institution. This course can meet the needs of students preparing for work in Cooperative Extension as well as those currently so engaged. (Credit in CA 401 excludes credit in this course.)
461. **Rural Social Organization (5). Pr., RSY 361 or SY 201 and junior standing.**
Nature of rural social organizations with emphasis on their structure, function and change. Extent to which organizations meet needs of rural people and principles of improving effectiveness.
462. **Sociology of Community Development (5). Pr., RSY 361 or SY 201 and junior standing.**
Various approaches to development of human resources and planning of changes within the total community. Development in different types of communities in the U. S. and world is considered with emphasis on small population centers.

GRADUATE COURSES

641. **Extension Methods (3). Lec. 4. Pr., RSY 441 or the equivalent.**
Extension programs are reviewed and related to effective program accomplishment for particular objectives and under different conditions that might prevail.
642. **Extension Programs (3). Lec. 4. Pr., RSY 441 or the equivalent.**
The over-all Extension organization and its relation to the steps and procedures of program development and evaluation. Designed particularly to meet the needs of persons responsible for Extension program development and evaluation at the county level.
662. **Social Systems and Communities (3).**
Interrelationship of institutions and organizations within the community and to larger societal systems—regional and national. Emphasis on small towns and metropolitan centers relative to planning community change.
670. **Research Methods in Agricultural Economics and Rural Sociology (3). Pr., graduate standing and consent of instructor.**
(Credit for RSY 670 excludes credit in AS 670)
680. **Special Problems in Rural Sociology. Credit to be arranged.**

Agricultural Engineering (AN)

Professor Kummer, *Head*

Associate Professors Renoll and Busch

Assistant Professors Hermanson, Lalor, Koon, and Rochester

Research Lecturers Cooper, Gill, Reaves, and Taylor

301. **Mechanics of Farm Machines (3). Lec. 2, Lab. 3. Pr., ME 321, MH 265, IE 205.**
Basic concepts and engineering principles of farm machinery, including basic design, power needs and their measurement, functional and economic analyses, utilization and management, testing, and safety as related to farm machines.

- 302. Mechanics of Tractor Power (3).** Lec. 2, Lab. 3. Pr., MH 265, ME 321, ME 301, IE 205.
Basic concepts and engineering principles of the farm tractor, including mechanics of the tractor, stability, traction, weight transfer, thermal efficiency, energy sources, economics, safety, testing and power measurement as related to tractors and power units.
- 303. Soil and Water Engineering I (4).** Lec. 3, Lab. 3. Pr., ME 340, IE 205.
Surveying procedures and application to soil and water problems. Rainfall-runoff relationships. Soil erosion mechanics and control methods. Upstream flood control analysis and design.
- 304. Drainage and Irrigation Engineering (3).** Lec. 2, Lab. 3. Pr., AN 303.
Soil-water-plant relationships. Theory and design of drainage systems. Irrigation systems design. Water quality and supply. Legal and economic aspects.
- 305. Agricultural Processing Engineering (3).** Lec. 3. Pr., ME 301, ME 340.
Introduction to process engineering, fundamental concepts, theory of unit operations such as pumps, fans, size reduction, cleaning, bulk movement, and heat transfer and mass transfer.
- 306. Electrical Systems in Agriculture (3).** Lec. 3. Pr., EE 273, Coreq., EE 381.
Application of electrical power, equipment and control devices to agricultural systems. Special emphasis on safe and efficient power distribution, motor selection and performance, and theory and performance of sensing and control devices.
- 307. Agricultural Structures Design I (3).** Lec. 2, Lab. 3. Pr., ME 207.
Analysis and design of structural systems of agriculture.
- 350. Soil and Water Technology (5).** Lec. 4, Lab. 3. Fall, Spring, Summer.
Technical application of soil and water resources management. Irrigation system planning and equipment selection.
- 351. Agricultural Machinery Technology (5).** Lec. 4, Lab. 3. Fall, Spring, Summer.
Agricultural machinery: utilization, management, selection, and economic justification.
- 352. Tractor and Engine Technology (5).** Lec. 4, Lab. 3. Winter.
Tractors and engines. Operation, fuels used, size selection, utilization, and economic justification.
- 353. Farm Building Technology (5).** Lec. 4, Lab. 3. Winter.
Selection of materials, methods of construction and functional needs of modern farm buildings.
- 354. Agricultural Processing Technology (5).** Lec. 4, Lab. 3.
Agricultural processing systems; includes storing, drying, pelleting, mixing and automatic materials handling systems.
- 401. Agricultural Power and Machinery Design (3).** Lec. 2, Lab. 3. Pr., AN 301, AN 302 and junior standing.
Design of equipment and systems to apply engineering principles to solutions of agricultural power and machinery problems. Functional requirements, safety, reliability, service conditions, power measurement, useful life, and creative design are combined to obtain designs for agricultural machine and power units.
- 403. Soil and Water Engineering II (3).** Lec. 2, Lab. 3. Pr., AN 304 and junior standing.
Small watershed hydrology. Open channel hydraulics applied to the design of irrigation, drainage, and erosion control facilities. Hydraulic design of conduits, and stilling basins.
- 405. Electrical and Processing Systems Design (3).** Lec. 3. Pr., AN 305, AN 306 and junior standing.
Design and layout of material handling systems, fundamental theory of particle movement, study of sensing and feed-back systems to include automatic controls and servo-mechanisms.
- 407. Agricultural Structures Design II (3).** Lec. 3. Pr., AN 307 and junior standing.
Functional requirements and design of animal shelters and agricultural storage buildings.
- 410-11. Special Problems (3-3).** Pr., Faculty adviser approval and AN 301-07.
Individual student endeavor supervised by instructor involving special Agricultural Engineering topics to which the engineering electives selected by the student will be complementary.
- 422. Farm Power and Equipment (5).** Summer. Half-quarter course. Pr., AN 351, junior standing. For Vocational Agriculture Teachers.
- 424. Farm Electrification (5).** Summer. Half-quarter course. Pr., junior standing. For Vocational Agriculture Teachers.
- 426. Farm Irrigation (5).** Summer. Half-quarter course. Pr., junior standing. For Vocational Agriculture Teachers.
- 432. Engineering in Agriculture I—Agricultural Machinery (3).** Lec-Dem. 4. Pr., graduate standing.
The utilization of modern agricultural machinery on the farm with emphasis on safety, management, costs, economic justification, and principles of operation. (Credit for both AN 432 and AN 422 may not be used to meet requirements for the Master's degree.)
- 434. Engineering in Agriculture II—Agricultural Power (3).** Lec-Dem. 4. Pr., graduate standing.
Farm tractor and power units used on the farm; includes the basic principles of operation with major interest toward lubrication, costs, operational problems, safety and a comparison of gasoline, Diesel, and LP gas fuels, and units. (Credit for both AN 434 and AN 422 may not be used to meet requirements for the Master's degree.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

601. **Advanced Small Watershed Hydrology (4).** Pr., AN 403, CE 412.
Hydrograph synthesis. Mathematical modeling of runoff and streamflow. Probability analysis of hydrologic events. Design of upstream systems for flood and erosion control and water supply.
602. **Advanced Farm Power and Machinery (5).** Arrange. Pr., AN 401.
Principles of operation and analysis of design of basic machine elements, hydraulic systems and functional requirements of farm power units, agricultural machinery and materials of construction.
603. **Erosion and Sediment Transport (4).** Pr., AN 403.
Mechanics of overland flow and the initiation of sediment movement. Analysis of alluvial channel flow. Theory of sediment transport. Channel stability and regime theory.
604. **Agricultural Engineering Problems.** Credit to be arranged not to exceed a total of 5 hours.
Special advanced engineering and design problems.
605. **Soil Dynamics of Tillage and Traction (3).** Pr., CE 418, or AY 455 and permission of instructor.
Analysis and measurements of soil reactions, as affected by the physical properties of the soil, when subjected to forces imposed by tillage implements and traction devices. Considered are shear, cohesion, adhesion, consolidation, plasticity and abrasion soil properties.
606. **Agricultural Engineering Management 3 cr. Pr., 25 cr., in Math.**
Application of the principles of engineering management and economy to the design, development and use of engineering systems in agriculture: Economic evaluations of engineering proposals, inventory theory in the selection and maintenance of agricultural equipment, replacement theory, application of CPM and PERT to scheduling under uncertainty, applications of linear programming, machine reliability, warranties and patents.
608. **Seminar.** Credit to be arranged. All quarters.
Reviews and discussions of research techniques, current scientific literature and recent developments in agricultural engineering research.
699. **Research and Thesis.** Credit to be arranged.
May be taken more than one quarter.
799. **Doctoral Research and Dissertation.** Credit to be arranged.

Agronomy and Soils (AY)

Professors Ensminger, *Head*, Adams, Cope, Donnelly, Hiltbold, Hood, Hoveland,
Johnson, Rogers, Scarsbrook, and Wear
Associate Professors E. Evans, and King
Assistant Professors Buchanan, Dickens, C. Evans, and Hajek
Research Lecturers Pearson and Taylor

201. **Principles of Grain Production (5).** Lec. 4, Lab. 2. Fall, Spring.
Fundamental factors involved in the economic production of corn, small grains, grain sorghum, peanuts and soybeans.
304. **General Soils (5).** Lec. 4, Lab. 2. Winter, Spring. Pr., CH 105 and 105L or CH 207.
The formation, classification, composition, properties, management, fertility, and conservation of soils in relation to the growth of plants.
305. **General Soils (5).** Lec. 4, Lab. 2. Winter. Pr., CH 103-104.
The formation, classification, composition and properties of soils and their influence on vegetative growth and development on forest lands. Open only to students in Forestry.
307. **General Soils (5).** Lec. 4, Lab. 2. Fall, Spring. Pr., CH 103-104.
The general field of soils including genesis, classification and fertility.
310. **Earth Science (5).**
Materials of the earth; forces that shape and sculpture the earth's surface, including weathering, water, soil formation and erosion; soil geography; and historical geology. (Not open to students in School of Agriculture. Credit toward degree may not be earned in both this course and a General Soils course.)
401. **Principles of Forage Production (5).** Lec. 4, Lab. 2. Fall, Winter. Pr, junior standing.
Grass and legume forage crops. The crops are considered from the standpoint of (a) pasture crops, (b) hay and silage crops, (c) soil improving crops.
402. **Soil Fertility (5).** Lec. 5. Spring. Pr., AY 304, 305 or 307, and junior standing.
Lectures, demonstrations and problems illustrate principles of soil fertility as related to fertilizer practices and crop production. An advanced course required of all students majoring in Agronomy and Soils. Either AY 402 or AY 407, but not both, may be used to satisfy the minimum requirement for the Master's degree.
404. **Fiber and Oil Crops (5).** Lec. 5. Winter. Pr., junior standing.
Most of the time will be devoted to cotton, soybeans and peanuts with a limited amount of time devoted to other fiber and oil crops.

405. **Turf and Its Management (3).** Lec. 2, Lab. 2. Fall. Pr., AY 304, BY 306, and junior standing.
Species of turf crops in relation to latitude, soil type, shading, establishment, fertility, and maintenance.
406. **Commercial Fertilizers (3).** Lec. 3. Winter. Pr., AY 304, 305 or 307, or by special permission of instructor; also junior standing.
Raw material reserves; manufacture, and properties of fertilizer materials, properties and formulation of mixtures; relative efficiency of various plant nutrient sources; and related agronomic problems.
407. **Soil Management (5).** Lec. 5. Summer. Pr., AY 304, AY 305, or AY 307, and junior standing.
Physical, chemical and biological properties of soils and their management. An advanced course designed for students in Vocational Agriculture. Either AY 402 or AY 407, but not both, may be used to satisfy the minimum requirement for the Master's degree.
408. **Soil Resources and Conservation (5).** Lec. 4, Lab. 2. Fall. Pr., AY 304, 305 or 307 and junior standing.
Soils as a natural resource for land-use planning; their classification and management for crop production, recreation, and urban and industrial development.
409. **Seed Production (3).** Spring, odd years. Pr., AY 201, or 401 and junior standing.
Methods and factors affecting production, storage, and processing seed.
410. **Methods of Plant Breeding (5).** Lec. 4, Lab. 2. Fall, even years. Pr., ZY 300 and junior standing.
A general course in the principles and methods of plant breeding.
411. **Soil Management (3).** Lec. 4. Pr., AY 304, 305 or 307 and graduate standing.
Classification, physical properties, moisture, organic matter, and pH of soils, and their management with respect to these properties. (Credit for both AY 411 and AY 402, or AY 407 may not be used to meet requirements for the Master's degree.)
412. **Advanced Forage Crops (3).** Lec. 4, Pr., AY 401 and graduate standing.
Forage species and mixtures, their establishment, maintenance and management for different soils and systems of grazing.
414. **Principles and Use of Herbicides in Crop Production (3).** Lec. 2, Lab. 2. Fall. Pr., CH 104 and junior standing.
Principles and use of herbicides in agronomic crops. Acquaints the student with methods of application including equipment, time of application, methods of incorporation, and formulation of herbicides. The fate of herbicides in soil and the residual effect on succeeding crops.
415. **Soil Morphology (5).** Lec. 3, Lab. 4. Spring. Pr., AY 304, 305 or 307 and junior standing.
Physical, chemical and mineralogical properties of soils are studied in relation to their classification for engineering and agricultural uses.
455. **Soil Physics (5).** Fall, odd years. Pr., AY 304 and junior standing.
Lectures and demonstrations to illustrate fundamental physical properties of soils.
499. **Special Problems (1-5).** Credit to be arranged. Pr., departmental approval and junior standing. Not open to graduate students.
Students will work under the direction of a staff member on special problems in crop or soil science.

GRADUATE COURSES

601. **Agronomy Problems (1-5).** Credit to be arranged.
Conferences, problems, and assigned reading in soils and crops, including results of agronomic research from the substations and experiment fields.
606. **Soil Microbiology (5).** Lec. 3, Lab. 4. Spring, odd years. Pr., AY 402 and VM 200.
Soil microorganisms and their physiological processes related to soil development and plant nutrition. The role of microorganisms affecting the chemical and physical properties of soils will be studied, with emphasis on the cyclical transformations of nitrogen, phosphorous, carbon, and sulfur.
608. **Experimental Methods (5).** Fall, even years.
Experimentation in the agricultural sciences including experimental techniques, interpretation of research data, use of library references and preparation of publications; and consists of problems, assigned readings, and lectures.
615. **Seminar in Genetics (1).** Pr., ZY 300.
Reports by students and staff members on current research and the literature in the field of genetics.
616. **Advanced Plant Breeding (5).** Lec. 4, Lab. 2. Winter, even years. Pr., ZY 300.
Principles, methods, and techniques involved in plant breeding. Laboratory work will consist of studying active plant breeding programs, studying pollination techniques, and making pollinations. A term paper will be required.
617. **Experimental Evolution (5).** Spring, even years. Pr., ZY 300 and AY 616.
The factors affecting the evolution of species.

618. **Crop Ecology (5).** Winter, even years. Pr., BY 306 and AY 402.
Distribution and adaptation of crop plants as influenced by environment with emphasis on climatic factors.
619. **Theories in Forage Crops Management (5).** Lec. 3, Lab. 4. Winter, odd years. Pr., BY 306 and AY 402.
Principles involved in successful establishment, maintenance, and management of crops used for grazing, hay and silage. Several field trips will be made to research stations and private farms to observe management practices.
620. **Philosophy and Interpretation of Experimental Research (3).** Lec. 4. Pr., graduate standing.
Systematic study of the principles and methods of experimental research; the utility of experimental designs; and the utilization of statistical and graphical aids in the interpretation of data. Mathematical comparisons of the efficiency of designs and calculations of statistical values are not a part of this course.
654. **Advanced Soil Fertility (5).** Fall, even years. Pr., AY 402.
Composition, properties and management of soils in relation to the nutrition and growth of plants.
655. **Soil and Plant Analysis (5).** Lec. 2, Lab. 6. Winter, odd years. Pr., CH 206 and AY 402.
Principles, methods, and techniques of quantitative chemical analysis of soils and plants applicable to soil science.
656. **Soil Clay Mineralogy (5).** Lec. 4, Lab. 2. Fall, even years.
Crystal structure and properties of the important clay size minerals of soils and clay deposits combined with identification techniques involving X-ray diffraction and spectroscopy, differential thermal analysis, electron microscopy, specific surface analysis, and infrared absorption.
657. **Soil Chemistry (5).** Fall, odd years. Pr., CH 407 and AY 402.
Interpretation of soil properties and chemical reactions in terms of ion exchange, solubility diagrams, solution equilibria, electrochemistry, and electrokinetics of charged particles.
658. **Advanced Soil Physics (5).** Lec. 2, Lab. 6. Pr., MH 263, PS 205-206, and AY 455.
Physical properties of soils in relation to plant growth. Emphasis is placed on methods of measuring soil physical properties and the interpretation of these measurements in terms of plant growth.
699. **Research and Thesis.** Credit to be arranged.
Research and thesis on problems related to crop production, plant breeding, soil fertility and soil chemistry.
799. **Doctoral Research and Dissertation.** Credit to be arranged.

Animal Science (AH)

Professors Warren, *Head*, Anthony, Patterson, Smith, and Strength

Associate Professors Harris, Huffman, Parks, Squiers, Tucker,

Turney, and Wiggins

Assistant Professor Daron

Instructors Collins and Powell

200. **Introductory Animal Husbandry (5).** Lec. 4, Lab. 2. Fall, Winter, Spring.
Provides some understanding of the scope and importance of the field. The importance of livestock to agriculture and to the nutrition of people. The role of nutrition, breeding, selection, and management in livestock production.
204. **Animal Biochemistry and Nutrition (5).** Fall, Winter, Spring. Pr., CH 104.
Principles of animal biochemistry and nutrition and the nutritional requirements of farm animals.
301. **Livestock Judging (3).** Lec. 1, Lab. 4. Winter, Spring. Pr., AH 200.
Theory and practice in the selection of beef cattle, swine, sheep and horses.
302. **Feeds and Feeding (3).** Fall, Spring. Pr., AH 204.
Principles and practices of balancing and compounding of rations for beef cattle, sheep, and swine.
303. **Livestock Production (5).** Lec. 4, Lab. 2. Winter. Pr., AH 204.
Efficient practices for selection and management of beef cattle and swine. For students in Agricultural Education, and Agricultural Economics and Rural Sociology. Credit in AH 491 and/or AH 402 excludes credit for AH 303.
304. **Meats (3).** Lec. 2, Lab. 2. Fall.
Study and practice in slaughtering, cutting, grading, judging, and evaluating carcasses of meat animals.
309. **Live Animal and Carcass Evaluation (3).** Lec. 1, Lab. 4. Spring. Pr., AH 200.
Classifying and grading market hogs, cattle and sheep with major emphasis on indicators of carcass merit. Carcass grading, yield grading and evaluation.
310. **Meat and Meat Products (3).** Lec. 2, Lab. 2. Spring. General Elective.
Theory and practice of processing, preservation, selection and uses of meats. Degree credit may not be earned in both AH 304 and AH 310.

401. **Swine Production (5).** Lec. 4, Lab. 2. Fall, Spring. Pr., AH 200, AH 204, junior standing.
Practical problems involved in the breeding, feeding, and management of swine for economic production.
402. **Beef Cattle Production (5).** Lec. 4, Lab. 2. Fall, Winter. Pr., AH 200, AH 204, and junior standing.
Practical phases of breeding, feeding, and management of beef cattle for economic production.
403. **Animal Breeding (5).** Lec. 4, Lab. 3. Winter. Pr., ZY 300 and junior standing.
Application of genetic principles to the breeding of cattle, sheep, and swine. Studies of different systems of breeding and selection and their related efficiencies for livestock improvement.
406. **Animal Reproduction (5).** Lec. 4, Lab. 2. Fall. Pr., junior standing.
Anatomy and physiology of the male and female reproductive tract; hormones; estrus and estrus cycle; ovulation, mating, gestation, parturition; lactation; sperm physiology; collection, storage and dilution of semen; artificial insemination; fertility; sterility; pregnancy tests.
407. **Advanced Livestock Judging (3).** Lec. 1, Lab. 4. Fall. Pr., AH 301 and approval of instructor.
An advanced course in the selection and grading of livestock.
408. **Applied Animal Nutrition (5).** Lec. 4, Lab. 2. Winter. Pr., AH 204 and senior standing.
Principles of animal nutrition and their application to the production of farm animals, including the study of physiology of nutrition, metabolism of nutrients and recent nutritional developments.
409. **Horse Production (3).** Lec. 2, Lab. 2. Spring.
The selection, breeding, feeding, management and use of horses in the Southeast.
410. **Meat Technology (3).** Lec. 2, Lab. 2. Winter. Pr., AH 304 or AH 310, and junior standing.
Meat curing and processing procedures and the biochemical alterations of meat during aging, curing and processing.
411. **Undergraduate Seminar (1).** Pr., senior standing.
Lectures, discussions and literature reviews by staff, students and guest lecturers.
418. **Biochemistry (5).** Lec. 4, Lab. 3. Fall. Pr., CH 208 and junior standing.
Classification, structure and chemistry of the major chemical constituents of living matter.
419. **Biochemistry (5).** Lec. 4, Lab. 3. Winter. Pr., AH 418.
Introduction to metabolism.
450. **Advanced Animal Nutrition and Livestock Feeding (3).** Lec. 4. Pr., graduate standing.
Principles of nutrition, nutritional requirements, compounding of rations, role of additives in livestock feeds and study of newer research findings.
451. **Breeding and Genetic Improvement of Farm Animals (3).** Lec. 4. Pr., graduate standing.
A study of basic genetic principles and their application to the breeding of farm animals. Systems of breeding and selection.
452. **Applied Swine Production (3).** Lec. 4. Pr., graduate standing.
A study of the basic principles of swine production and the application of recent developments.
490. **Special Problems (1-5).** Credit to be arranged. Pr., departmental approval and junior standing. Not open to graduate students.
Students will work under the direction of a staff member on specific problems.

GRADUATE COURSES
(Graduate Standing Required)

600. **Meat Science (3).** Lec. 3, Lab. 2. Winter. Pr., AH 410 or equivalent.
A comprehensive study of the chemical, physical, histological and bacteriological properties of meats.
607. **Comparative Animal Nutrition (3).** Fall. Pr., AH 408.
Advanced comparative nutritional requirements in beef cattle, sheep, swine and laboratory animals.
608. **Advanced Animal Reproduction (5).** Pr., AH 406, ZY 424.
Physiology and endocrinology of reproduction.
609. **Advanced Beef Cattle Production (5).**
Advanced studies relating to the production of beef cattle.
610. **Advanced Swine Production (5).**
Advanced studies of swine production.
611. **Seminar.** Credit to be arranged.
612. **Genetics of Populations (5).** Pr., AH 403.
Genetic composition of populations and factors affecting rates of change and conditions of equilibrium.

614. **Minerals (5).** Pr., CH 208 and satisfactory courses in animal nutrition.
The specific functions of minerals in animal metabolism.
615. **Ruminant Nutrition (5).** Pr., ZY 424 and AH 419.
Rumen fermentation and the biochemistry of ruminant metabolism.
617. **Microbial Biochemistry (5).** Fall. Pr., 5 hours of microbiology and AH 419.
The anatomy, growth and metabolism of the bacterial cell with emphasis on the biochemical makeup of the cell and the regulation of its activities; the use of microorganisms for quantitative assays.
618. **Current Problems and Practices in Livestock Farming (5).** Summer.
Intensive studies of new research findings and their application to livestock production on Alabama farms. Primarily for Vocational Agriculture Teachers and County Extension Workers.
619. **Experimental Methods (5).** Pr., satisfactory courses in statistics.
Research methods in the animal sciences including design of experiments, experimental techniques, analysis and interpretation of data, evaluation of research literature and preparation of publications.
620. **Experimental Pathology of Metabolic Diseases (5).** Winter, by arrangement.
Pr., VM 418, satisfactory courses in histology, biochemistry, physiology and general pathology.
A comprehensive study of the structural and functional changes associated with metabolic diseases.
641. **Proteins (5).** Pr., AH 419 & CH 407 or approval of instructor.
Chemical and physical properties of amino acids and proteins, protein structures, and the relation of protein structure to function.
643. **Enzymes (5).** Pr., AH 419 & CH 407 or approval of instructor.
The principles of enzyme chemistry including the physical, chemical and catalytic properties of enzymes; classification of enzymes; and enzyme formation.
644. **Metabolism (5).** Pr., AH 419. Advanced study of metabolic processes.
645. **Biochemical Research Techniques (5).** Pr., AH 419.
To acquaint the advanced graduate student with the modern techniques used in biochemistry.
690. **Special Problems. (1-5 hours. Credit to be arranged.)**
Conference problems, assigned reading and reports in one or more of the following major fields: (a) animal biochemistry and nutrition, (b) animal breeding and genetics, (c) physiology of reproduction, (d) nutritional pathology, (e) animal production, (f) experimental pathology, (g) histochemistry, and (h) meats.
699. **Research and Thesis. Credit to be arranged.**
Research and thesis may be on technical laboratory problems or on problems directly related to beef cattle, sheep or swine.
799. **Doctoral Research and Dissertation. Credit to be arranged.**

Architecture (AR)

Professors Millman, *Head*, McPheeters, Schaer, Snow, and Speer
Associate Professors Carter, Davis, Doerstling, Latta and Pfeil
Assistant Professors Faust, Haire, Jarvis, Kaip, Laraway, Pickard,
Samuelson, and Tutwiler
Instructors Kimbrough, Menzies, Stanland, and Wedin
Visiting Assistant Professor Akalin

- 110-11. **Design Fundamentals (5-5).** Lab. 10-10.
Techniques and methods in graphic communication, and introduction to design principles.
- 201-2-3. **Architectural Design (5-5-5).** Lec. 2-2-2, Lab. 10-10-10. Pr., A student must receive a grade of "C" or higher in AT 105, 110, and 111 to be admitted to AR 201. The School reserves the right to refuse advancement to the student regardless of grades if, in the opinion of the faculty, the student does not exhibit sufficient motivation.
Principles of spatial composition and structural organization; approaches to architectural design by the analysis of design determinants—10 hours per week in design laboratory. Two hours per week of discussions and laboratory criticism.
- 301-2-3. **Architectural Design (5-5-5).** Lab. 15-15-15. Pr., AR 203, Coreq., BT 220.
Admission only upon recommendation of the Committee on Design.
Analysis and solution of buildings of moderate complexity, with emphasis on domestic, civic, and recreational problems; increased attention to construction and finish details. Research, discussions, drawings, models.
360. **Appreciation of Architecture (3).** General elective. Pr., sophomore standing.
(Not open to AR and ID students.)
Architectural development with particular attention to American and contemporary examples. Illustrated lectures, readings, essays.

- 361-2-3-4. History and Theory of Architecture (3-3-3-3).** Pr., sophomore standing.
The development of architecture from ancient times through contemporary examples. The cultural and social milieu, as well as the technology of each period will be investigated to better understand the basic determinants of architectural form. Composition of architectural space, town planning, and landscape architecture will be considered. Illustrated lectures, readings, drawings, and reports.
- 370. Spaces for Living (3).** General elective. Pr., junior standing. (Not open to AR and ID students.)
Contemporary concepts of design, spatial organization, materials, furnishings, and gardens in relation to all major types of residential architecture. Illustrated lectures, readings, reports.
- 401-2-3. Architectural Design (5-5-5).** Lab. 15-15-15. Pr., AR 303, Coreq., BT 313.
Buildings of advanced complexity, with increased emphasis on the relation between space organization and the structural system. Research, discussions, drawings, models.
- 435. Art and Architecture Seminar (3).** Pr., 4th year standing.
Readings, discussions, and projects on the relation of the graphic and plastic arts to architecture.
- 460. The Architect and Society (3).** Pr., 4th year standing.
The social, economic, and political factors which have influenced the contemporary expression of architectural design and practice. Analysis of great works and philosophies which led the way to new approaches in design. Appreciation of aesthetics and function as applied to form. Lectures, outside reading and reports.
- 465-6. Architectural Design (5-5).** Lab. 15-15. Pr., AR 403. Admission upon recommendation of the Committee on Design.
Analysis and design of buildings of advanced complexity, with emphasis on multi-story commercial and institutional projects; group planning and advanced site study. Research, reports, discussions, drawings, models.
- 467. Architectural Design (7).** Lab. 21. Pr., AR 466, AR 499.
The development of a major design problem under direction of the Committee on Design. Drawings, models, details, and written explanations, oral presentation for jury consideration.
- 471-72. Professional Practice (3-3).** Pr., 5th year standing.
Procedures in architectural practice; construction methods, estimation of quantities and costs. Office organization; legal requirements; professional organizations and relations; civic responsibility, professional ethics.
- 476. Seminar in Contemporary Concepts (5).** Pr., AR 364.
Current achievements in world architecture with emphasis on broad movements and emerging patterns. Research, directed reading, reports, and discussion.
- 477. Seminar in Historical Problems (5).** Pr., AR 364.
Open to students who have shown ability, initiative, and industry in developing individual projects. Research, reports, and drawings under supervision on approved topics.
- 478. Seminar in Technological Problems (3).** Pr., 4th year standing.
Current technological advances in the building industry and evaluation of their impact upon architecture.
- 479. Seminar in Architectural Literature (2).** Pr., 4th year standing.
A guided study and discussion of selected readings.
- 495. Honors Program. Credit to be arranged up to 5 hrs.** Pr., 4th year standing.
Admission only by the Committee on Honors Program. Development of an area of concentration through independent study. Scope of work and its evaluation to be determined by the Committee. May be taken more than one quarter.
- 499. Design Research (2).** Pr., AR 465.
The selection and comprehensive programming of a terminal problem in architecture to be executed in AR 467.

Courses specifically required in the Interior Design curriculum (ID)

- 215-16-17. Elements of Interior Design (3-3-3).** Lec. 1, Lab. 3. Pr., AR 111.
The profession of interior design including professional procedures, relationships, ethics, correlation with architecture and other arts. Lectures, readings, discussions and research.
- 305-6-7. Interior Design (5-5-5).** Lab. 15-15-15. Pr., AR 203. Admission upon recommendation of the Committee on Design.
Analysis and solution of interiors of moderate complexity, with emphasis on domestic and commercial problems. Research, discussion, drawings, models.
- 365-6. Period Interiors (5-5).**
The development of interior spaces, furniture, fabrics, and accessories from pre-Renaissance to 1900. Illustrated lectures, readings, reports, and field trips.
- 367. Contemporary Interiors (3).** Lec. 2. Pr., AR 366.
The fundamental aspects of interior design, spatial order and characteristics, furniture and fabric design, from 1900 to date. Illustrated lectures, readings, reports.
- 405-6. Interior Design (5-5).** Lec. 2-2, Lab. 9-9. Pr., AR 307. Admission upon recommendation of the Committee on Design.
Analysis and solution of interiors of advanced complexity, with emphasis on institutional and public problems. Research, discussions, drawings, models.

407. **Interior Design (7).** Lec. 2, Lab. 15. Pr., AR 406.
The development of a major design problem under the direction of the Committee on Design. Drawings, models, details; oral presentation for jury consideration.
408. **Interior Design Research (2).** Lec. 1, Lab. 3. Coreq., AR 406.
The selection and comprehensive programming of a terminal problem in interior design to be executed in AR 407.
441. **Professional Practice (3).** Lec. 1, Lab. 3.
Office procedure and methods for interior designers; the techniques and execution of working drawings for buildings, cabinetry and interior details; specification. Discussions, drawings, inspections, reports.

Courses specifically required in the Industrial Design curriculum (IN)

210. **Industrial Design (5).** Lec. 1, Lab. 12. Pr., AR 105, 110, and 111. Admission only upon recommendation of the Committee on Design (1.00 overall).
The problems of visual communication. Perception theory, design fundamentals; color, figure organization, movement and balance, proportion and rhythm.
211. **Industrial Design (5).** Lec. 1, Lab. 12. Pr., AR 210.
An extension of principles encountered in Industrial Design I. A study and analysis of Industrial Design Fundamentals.
212. **Industrial Design (5).** Lec. 1, Lab. 12. Pr., AR 211.
Structural and functional relationship of design elements; convenience, utility, safety, maintenance.
221. **Materials & Technology (5).** Lec. 5. Pr., sophomore standing.
The properties and use of various materials in manufacture and a study of the machine and tool processes used by industry. Survey from the Designer's viewpoint.
222. **Technical Illustration (5).** Lec. 5. Pr., sophomore standing.
Axonometric drawing, perspective, and freehand graphics, as used by Industrial Designers.
223. **Industrial Design Methods (5).** Lec. 5. Pr., sophomore standing.
The methods and organizational procedures employed in the analysis and solutions of design problems. Survey of philosophies and theories of design.
308. **Design Workshop (3).** Lec. 1, Lab. 2. Pr., AR 210.
Modelmaking and creative modeling. Study Models, Presentation Models, Mock-ups, Prototypes.
310. **Industrial Design (5).** Lab. 15. Pr., AR 212, AR 222, AR 223, EG 105. Admission only upon recommendation of Committee on Design. (1.00 overall and 1.33 from AR 210, 211, 212.)
Design of machines and instruments. Arrangements of elements in systems.
311. **Industrial Design (5).** Lab. 15. Pr., AR 310, PS 204.
Design of domestic and office equipment.
312. **Industrial Design (5).** Lab. 15. Pr., AR 311.
Exhibition and packaging problems.
410. **Industrial Design (6).** Lec. 2, Lab. 12. Pr., AR 312.
Industrialized buildings. Building components produced by industrial means.
411. **Industrial Design (6).** Lec. 2, Lab. 12. Pr., AR 410. Admission only upon recommendation of Committee on Design. (1.25 overall and 1.50 from AR 310, 311, 312, 410.)
Design or re-design of products of advanced complexity.
412. **Industrial Design Thesis (6).** Lec. 2, Lab. 12. Pr., AR 411.
A project involving all design phases; project of the student's own selection and approved by the Committee on Design. Presentation of graphics, models and written explanations, and oral presentation before a Design Jury. The thesis material will be retained by the Department for one year.
415. **History of Industrial Design (5).** Pr., AR 212.
Design from the first Industrial Revolution to the present, with emphasis on the relation between design and science, art, technology, and the humanities.
485. **Seminar in Industrial Design (5).** Lec. 5. Pr., fourth year standing.
Development of individual projects. Research, design, reports, on approved topics.

Courses Offered to Graduate Planning Students and Others by Permission

200. **Graphic Communication (1).** Lab. 3. (Not open to AR, IN or ID students.)
A basic preparation in graphic techniques essential for communication of information and ideas for planning and urban design. Media and methods for mapping, diagramming, charting, and sketching are surveyed, analyzed, and applied.
601. **History and Theory of Planning (5).** Pr., graduate standing or permission.
The historical development of cities and urban regions is examined with particular emphasis on the interaction of their dynamic and structural elements. The impact of the planner and the planning process on shaping public policy and influencing private developmental decision-making is examined. (Formerly AR 601).

605. **Urban Design (3).** Pr., graduate standing or permission.
Seminar concerned with the theory and practice of building cities and their supporting regions, seeking a theory and language of urban design. Special attention is directed toward the forces which shape our cities and the resulting organization of functional systems, buildings, and outdoor space at the urban scale. (Formerly AR 475).
615. **A Seminar on Current Planning Issues (3).** Pr., graduate standing or permission.
An examination of topical issues in the fields of urban regional planning. (Formerly AR 474).
620. **Urban Planning Analysis (5).** Pr., URP 601 and URP 603.
Field application and involvement at the "city" or "neighborhood" level; data collection and analysis; agency and program identification; problem definition and recommendation of strategic plan; emphasis on real-world problems with an actual client. (Formerly AR 610).
680. **Special Problems. Credit to be arranged up to five hours.** Pr., graduate standing.
Directed study in area of special interest. Arranged by student and adviser and approved by adviser.

Art (AT)

Professors Young, Head, Abney, Sykes, and Williams

Associate Professors Kettunen, and Hiers

Assistant Professors Harper, Hatfield, Hobbs, Mims, Olson, Ross, and Taugner

Instructors Baggett, Fitzpatrick, Mims, Mitchell, and Walls

105. **Drawing I (5).** Lec. 2, Lab. 9.
Representational drawing. Linear construction, proportion, freehand perspective, chiaroscuro, surface treatments.
106. **Drawing II (5).** Lec. 2, Lab. 9. Pr., AT 105.
Emphasis on creativity, composition and pictorial organization. Interpretive drawing.
107. **Drawing III (5).** Lec. 2, Lab. 9. Pr., AT 105.
Drawing in various media emphasizing a subjective approach to the human figure as form and as a compositional element.
113. **Perspective (3).** Lec. 2, Lab. 3. Pr., AT 105.
Linear perspective. Shadows, Reflections.
181. **Design Fundamentals I (5).** Lec. 2, Lab. 9.
Plastic elements. Relationship of the arts. Problems in basic design.
182. **Design Fundamentals II (5).** Lec. 2, Lab. 9. Pr., AT 105 and 181.
A continuation implementation and advanced application of principles encountered in AT 181.
205. **Figure Drawing I (5).** Lec. 2, Lab. 9. Pr., AT 107.
Drawing from the model in various media with emphasis on proportions, interpretation and expression.
211. **Lettering (5).** Lec. 5. Pr., AT 181.
Historical development of letters. Anatomy of letters. Spacing. Drill exercises with pen. Fundamental alphabets and compositions of body matter lettered directly.
212. **Graphic Processes (5).** Lec. 5. Pr., sophomore standing.
Printing processes, photomechanical reproduction, copy-fitting, paper manufacture and usage, related subjects.
215. **Figure construction (5).** Lec. 3, Lab. 6. Pr., AT 205.
Lectures deal with form, function and manner of operation of skeletal and muscular parts of the body. Drawing from casts, models, and skeleton.
222. **Painting I (5).** Lec. 2, Lab. 9. Pr., AT 106 and 181.
Transparent water color. Study of the medium and of picture structure. Exercises in still life, figure and landscape painting.
224. **Painting II (5).** Lec. 2, Lab. 9. Pr., AT 106 and 181.
Opaque water color. Techniques and properties of the medium. Objective and subjective handlings as a further extension and application of the plastic elements.
227. **Sculpture I (5).** Lec. 2, Lab. 9.
Three dimensional expression. Clay and other media.
305. **Printmaking I (5).** Lec. 2, Lab. 9. Pr., AT 182, 215 and 1.00 grade point average.
Relief print media. Woodcut, linoleum cut and related techniques.
- 307-8. **Figure Drawing II and III (5-5).** Lec. 2-2, Lab. 9-9. Pr., AT 205.
Drawing from the model in various media, with emphasis on construction, interpretation, and expression.
317. **Packaging (5).** Lec. 2, Lab. 9. Pr., AT 381.
Applied problems in package design.
322. **Painting III (5).** Lec. 2, Lab. 9.
Introduction to oil painting. Exploiting of materials and techniques with still life and the figure as a means for aesthetic exploration.
324. **Painting IV (5).** Lec. 2, Lab. 9. Pr., AT 224 and 322. 1.00 grade point average.
Painting with optional media and subject matter.

327. **Sculpture II (5). Lec. 2, Lab. 9. Pr., AT 227.**
Three dimensional expression. Emphasis placed on idea, form and technique.
338. **Art History I (5). Pr., sophomore standing.**
The chronological development of Western painting and sculpture from pre-historic through modern times as related to the cultural setting. Illustrated lectures.
339. **Art History II (5). Pr., AT 338.**
An examination of ideas, philosophies common to all periods of art history, and a comparison of periods in terms other than chronological development. Illustrated lectures, readings, drawings, and reports.
342. **Elementary School Art (5). Lec. 2, Lab. 9. Pr., junior standing.**
Background of design elements, theory of teaching art, methods and materials especially related to elementary school art. Development of creative thinking in elementary school teachers.
355. **Illustration I (5). Lec. 2, Lab. 9. Pr., AT 215.**
Basic problems in illustration emphasizing both aesthetic and functional aspects. Drawings and designs for line and halftone reproductions.
361. **Fashion I (5). Lec. 2, Lab. 9. Pr., AT 182 and AT 215.**
Drawing the fashion figure, employing basic types of rendering used fashion advertising.
381. **Visual Design I (5). Lec. 2, Lab. 9. Pr., AT 182, AT 211, AT 212, AT 215 and 1.00 grade point averages.**
Fundamentals of graphic design. Basic type faces. The trademark. Preparation of art copy for reproduction. Applied problems in advertising and editorial layout.
382. **Visual Design II (5). Lec. 2, Lab. 9. Pr., AT 381.**
Italic types, problems combining copy-fitting with basic illustration. Preparation of color-separation art copy. Creative expression with letter forms. Letterpress and photo-offset production. The poster. Packaging graphics.
383. **Visual Design III (5). Lec. 2, Lab. 9. Pr., AT 382.**
Script lettering. Planned photographic illustration. Creative design as communication. The trade name. Silkscreen production. Research in pertinent art movements. Packaging graphics.
405. **Printmaking II (5). Lec. 2, Lab. 9. Pr., AT 305 and junior standing.**
Intaglio print media. Etching, engraving and related techniques.
406. **Printmaking III (5). Lec. 2, Lab. 9. Pr., AT 305 and junior standing.**
Stone and metal plate lithography.
407. **Printmaking IV (5). Lec. 2, Lab. 9. Pr., AT 305 and junior standing.**
Serigraphy. Methods and techniques of silkscreen printing.
408. **Printmaking V (5). Lec. 2, Lab. 9. Pr., either AT 305, 405, 406 or 407 and junior standing.**
Advanced work in either relief, intaglio, planographic or serigraphic printmaking.
422. **Painting V (5). Lec. 2, Lab. 9. Pr., AT 324 and junior standing.**
Painting with optional media and subject matter.
423. **Painting VI (5). Lec. 2, Lab. 9. Pr., AT 422 and junior standing.**
Fundamental problems of painting figures. Experimenting with various means of interpreting the figure in both abstract and realistic compositions.
427. **Sculpture III (5). Lec. 2, Lab. 9. Pr., IL 102 and AT 227.**
Three dimensional expression. Metal and metal techniques emphasized.
431. **Contemporary Art (3). General Elective.**
A survey of modern painting, sculpture and visual design. Illustrated lectures, readings.
- 432-3. **Seminar in Art Problems (5-5). Pr., senior standing.**
Open to students who have shown ability, initiative, and industry in carrying out individual projects. Research, drawings and reports on approved historical topics under supervision.
434. **Independent study in Art History (5). Pr., senior standing.**
Open to students who have shown ability, initiative, and industry in carrying out individual projects. Research, drawings and reports on historical topics under supervision.
442. **Art in Education (5). Lec. 3, Lab. 6. Pr., senior standing.**
Lectures, reading and research concerning principles and objectives of pertinent phases of Art for the purpose of understanding their significance in teaching at all levels. Emphasis is placed upon creativity rather than technical skill in laboratory experimentation.
456. **Illustration II (5). Lec. 2, Lab. 9. Pr., AT 355.**
Sustained problems in illustration emphasizing both subjective and objective treatments.
462. **Fashion II (5). Lec. 2, Lab. 9. Pr., AT 361.**
Problems in advanced rendering for fashion advertising: figured and textured fabrics, furs, and accessories.
463. **Fashion III (5). Lec. 2, Lab. 9. Pr., AT 462.**
Design of clothing in all categories; historic adaptations; wardrobe color coordination; personality styling.
481. **Visual Design IV (5). Lec. 2, Lab. 9. Pr., AT 383.**
Original student alphabet with application. Research in pertinent art movements. The brochure. Newspaper layout. Television project. Three-dimensional display.

482. **Visual Design V (5). Lec. 2, Lab. 9. Pr., AT 481.**
Optional problems in graphic design used to extend or improve student portfolios.
496. **Thesis. Pr., senior standing.**
A terminal Fine Arts project initiated by the student and accompanied by a written analysis and evaluation. Both problems and written matter will be defended orally by the student before a faculty group.
497. **Thesis. Pr., senior standing.**
A terminal Visual Design project initiated by the student and accompanied by a written analysis and evaluation. Both problems and written matter will be defended orally by the student before a faculty group.

GRADUATE COURSES

- 605-6-7-8. **Graduate Design (5-5-5-5). Lab. 15-15-15-15.**
Advanced programs of creative design in the student's elected field.
627. **Advanced Sculpture (5). Lab. 15. Pr., AT 327 and graduate standing.**
Aspects of sculptural organization: relief and three-dimensional. Emphasis on idea and technical procedure.
- 641-2-3. **Graduate Research in Art Problems I-II-III (5-5-5).**
Research on approved topics in the student's special field. Conferences and reports.
699. **Research and Thesis. Credit to be arranged. All quarters.**
A major art problem consisting of a sustained single project or a logical sequence of shorter projects. The candidate will be required to conceive and execute a work or works exhibiting pronounced creative ability and technical proficiency. Upon recommendation of the major professor, a written essay may be required to accompany the project.

Aviation Management (AM)

Professor Pitts, *Head*

Assistant Professors Callan, Decker, Kiteley, and Townsend
Instructors Boston and Roberts

201. **Elementary Aeronautics (5).**
Aviation and the basic principles of flight. This course is open to students in all divisions of the University who desire a general and practical knowledge of aviation.
202. **Aerospace History (3).**
Significant events and accomplishments in man's attempts to move through air and space. Emphasis is placed on activities during the twentieth century.
206. **Principles of Private Flight (5). Lec. 5.**
General introduction to flight and preparation for the FAA private pilot written examination. Topics of theory of flight, aircraft and engines, regulation, navigation, meteorology, and aircraft operation and performance covered.
207. **Private Pilot Flight Training (1). Lab. 3. Coreq., AM 206 or instructor's consent.**
Dual and solo flight instruction and discussion to prepare for FAA Private Pilot Certificate. Special Fee.
304. **Meteorology (5). Lec. 4, Lab. 3. Pr., sophomore standing.**
Elementary meteorology including a basic understanding of the atmosphere, measurement of meteorological elements and effects of these on the lower atmosphere. Not open to students requiring AM 305.
305. **Aviation Meteorology (5). Lec. 4, Lab. 3. Pr., PS 206.**
Basic meteorology and its application to aviation to include computation of data and preparation of weather maps. Weather elements as related to operation of aircraft, computation of data; preparation of weather maps.
307. **Flight Navigation (5). Lec. 4, Lab. 3. Pr., AM 206 or instructor's consent.**
The principles of piloting, dead reckoning, and radio/electronic methods of navigation and related topics as applied to cross-country flight planning. Credit not permitted for students who have completed AM 312. Offered winter quarter only.
308. **Federal Aviation Regulations (3). Pr., sophomore standing.**
All regulations concerning airmen, aircraft, air agencies, operation and traffic rules.
309. **Aerospace Legislation (3).**
Federal, state and local legislation affecting aviation and space activities.
311. **Propulsion Fundamentals (5). Pr., PS 206.**
Principles of operation, major components and important features of typical propulsion systems used in aircraft and missiles. Includes an introduction to propulsion systems used for spacecraft.
312. **Guidance and Control Fundamentals (5). Pr., PS 206.**
Basic principles of aircraft and spacecraft guidance and control. Credit not permitted for students who have completed AM 307.
316. **Aircraft Operation and Performance (3). Lec. 2, Lab. 3. Pr., AM 206 or instructor's consent.**
Principles of aircraft performance and operations, including powerplants, aircraft systems and equipment, and advanced flight maneuvers required for commercial pilots. Offered Spring Quarter only.

317. **Commercial Flight Training I (1).** Lab. 3. Coreq., AM 316 or instructor's consent.
Continuation of flight training toward a Commercial Pilot Certificate with emphasis on the development of precision and accuracy in all intermediate and advanced flight maneuvers. Special Fee.
318. **Commercial Flight Training II (1).** Lab. 3. Pr., AM 317. Coreq., AM 307 or instructor's consent.
Continuation of flight training toward a Commercial Pilot Certificate with emphasis on cross-country, night and instrument flying. Special Fee.
319. **Commercial Flight Problems (3).** Lec. 2, Lab. 3. Pr., AM 307 or instructor's consent.
Review of principles of flight, aircraft and engine theory and operation, FAA regulations, navigation, meteorology and aircraft performance and operation as applied to commercial flying with emphasis on preparation for the FAA commercial written examination. Offered Winter Quarter only.
320. **Commercial Flight Training III (1).** Lab. 3. Pr., AM 318. Coreq., AM 319 or instructor's consent.
Conclusion of flight training for the Commercial Pilot Certificate with training in transition to complex aircraft. A continuation of instrument and night instruction and a review of all maneuvers for the commercial flight test. Special Fee.
337. **Air Transportation (5).** Pr., junior standing.
Historical development and present status of air transportation facilities; regulation, state and federal; legal characteristics of air transportation industry; problems and services of commercial air transportation.
401. **Aeronautical Seminar I (1).** Pr., junior standing.
Special problems and current status of the aircraft and related industries.
402. **Aerospace Vehicle Systems (5).** Pr., PS 206.
Design, use and function of typical hydraulic, mechanical and electrical systems used on aircraft and missiles. Includes an introduction to some of the major systems used in space vehicles.
405. **General Aviation Management and Operations (5).** Lec. 4, Lab. 3. Pr., junior standing.
Current principles and practices in management of commercial aviation operations including organization, functions, sources of revenue, operation and typical problems. Laboratory assignments are provided through the School of Aviation. Offered spring quarter only.
416. **Airport Management (5).** Pr., junior standing.
Principles of management; financing the airport; sources of income; establishment of rates for service rendered; problems of equipment and airport maintenance; accounting procedures; legal responsibilities; merchandising.
417. **Airline Operation (5).** Pr., junior standing and AM 337.
History of airlines; financial structure and sources of capital of airlines; sales, reservations and space control; dispatching and passenger care; determination of tariffs; personal relations; research; public relations.
419. **Air Traffic Control (5).** Lec. 4, Lab. 3. Pr., junior standing and AM 307 or AM 312.
All facilities used in controlling air traffic with special emphasis on control center and control tower operation.
421. **Principles of Instrument Flight (3).** Lec. 2, Lab. 3. Pr., AM 319 or instructor's consent.
Instruments, FAA regulations, air traffic control procedures, radio navigation, meteorology, and aircraft operation and performance as applied to instrument flying preparation for the FAA Instrument Pilot Written Examination. Offered Spring Quarter only.
422. **Instrument Flight Training (1).** Lab. 3. Pr., AM 320 or instructor's consent.
Flight and flight simulation instructions in the techniques of instrument flying in preparation for the FAA Instrument Pilot Rating. Special Fee.
427. **Multi-Engine Training I (1).** Lab. 3. Pr., a valid Private or Commercial Pilot Certificate.
Instruction in the methods and techniques of multi-engine aircraft pilotage. Sufficient ground and flight instruction is given to qualify for the FAA pilot rating of Multi-Engine-land. Additional time as observer copilot is provided on air taxi flights. Special Fee.
428. **Principles of Flight Instruction (3).** Pr., AM 320.
A study of the principles of teaching as applied to instructing, analyzing, and evaluating flight students with emphasis on preparation for the FAA Flight Instructor's Written Examination. Offered Fall Quarter only.
429. **Flight Instructor Training (1).** Lab. 3. Coreq., AM 428 or instructor's consent.
Discussion, instruction, and arranged practice in flight instruction in preparation for the FAA Flight Instructor Certificate.
431. **Multi-Engine Flight Training II (1).** Lab. 3. Pr., AM 427, AM 422.
Instrument and night operations to develop comprehensive flight proficiency in multi-engine aircraft. Includes experience as copilot in air taxi operations. Special fee.

433. **Transport Aircraft Flight Training (3).** Lec. 2, Lab. 3. Pr., AM 431.
Design, performance and operation of typical transport operations. Includes dual instruction and copilot experience. Offered winter quarter only. Special fee.

Biology (BI)

Coordinator and Assistant Professor Mason

For other staff and other biology courses, see sections for Botany and Plant Pathology below and Zoology-Entomology.

101. **Principles of Biology (5).** Lec. 4, Lab. 2.
All quarters. Integrated principles of biology, emphasizing structure and function of cells, reproduction, heredity, ecology, and evolution.
102. **Plant Biology (5).** Lec. 4, Lab. 3. Pr., BI 101.
All quarters. The morphology, physiology, relationships, distribution, and importance of plants.
103. **Animal Biology (5).** Lec. 4, Lab. 3. Pr., BI 101.
All quarters. The morphology, physiology, relationships, distribution, and importance of animals.
104. **Biology in Human Affairs (5).** Lec. 5. Pr., BI 101.
All quarters. Application of biological principles to an understanding of man as an organism and as a member of an ecosystem.

Botany and Plant Pathology (BY)

Professors Lyle, Head, Cairns, Curl, D. E. Davis, N. Davis, Diener,
Gudauskas, Marshall, and Patterson

Associate Professors Carter, Clark, and Truelove

Assistant Professors T. Davis, Freeman, Goslin, Klepper, Latham,
Rodriguez, and Shands

Instructor Benson

With few exceptions Principles of Biology, BI 101 and Plant Biology, BI 102, are prerequisite to all courses in this department. For a description of these and other general biology courses see the section for Biology (above).

306. **Fundamentals of Plant Physiology (5).** Lec. 3, Lab. 4. Pr., BI 101, CH 203 or 207 or equivalent.
General aspects of fundamental life processes of plants involving physiological, structural, and environmental relationships.
308. **Plants in Action (3).** Lec. 3. Summer. General Elective.
The botanical characteristics of most categories of plants including their kinship, origin, past and present distribution, and various ways utilized, as timbers, fruits and other foods, fibers, forage, ornamentals, drugs, etc. Local field trips will be made. (Restricted to students who have had no more than 5 hours credit in botany.)
309. **General Plant Pathology (5).** Lec. 3, Lab. 4. Winter, Spring. Pr., BI 101-2.
Nature cause, and control of plant diseases illustrated by studies of the more common diseases of cultivated crops.
310. **Forest Pathology (3).** Lec. 1, Lab. 4. Winter, Spring. Pr., BI 101-2 or equivalent.
Diseases of forest and ornamental trees from seedling to maturity including cause, identification, prevention, and control; decay in timber and forest products. Field trips emphasize major tree diseases in Alabama.
401. **Biological Statistics (5).** Lec. 4, Lab. 2. Fall, Spring, odd years. Pr., MH 161, and junior standing.
Basic concepts of experimental statistics, distributions, confidence limits, tests of significance, analysis of variance, linear correlation and regression. For advanced undergraduates and as a beginning course for graduate students in biological sciences.
405. **Introductory Mycology (5).** Lec. 2, Lab. 6. Fall. Pr., BI 101-2 or equivalent and junior standing.
A systematic survey of the fungi with emphasis on morphology.
406. **Systematic Botany (5).** Lec. 3, Lab. 4. Spring and Summer. Pr., BI 101-2 or equivalent and junior standing.
Identification, classification, nomenclature, distribution and systematic relationship of the seed-bearing plants, utilizing primarily elements of the local flora as study material. The historical background, literature of plant taxonomy, and rules of nomenclature will be considered. Field trips will be made.
409. **Marine Botany (6).** Lec. 5, Lab. 12. Summer. Pr., Ten hours of biology, including introductory botany, or consent of instructor.
Survey, based upon local examples, of the principal groups of marine algae and maritime flowering plants, involving their structure, reproduction, distribution, identification, and ecology. Restricted to participants in the Gulf Coast Research Laboratory Teaching Session.

410. **Aquatic Plants (5).** Lec. 3, Lab. 4. Summer. Pr., BI 101-2 or equivalent and junior standing.
Identification and study of those plants found in or associated with the fresh water features of Alabama. Emphasis will be on plants which have particular relationships to wildlife management or fish culture. Field trips will be taken and a plant collection required.
411. **Phycology (5).** Lec. 2, Lab. 6. Spring. Pr., BI 101-2 or equivalent and junior standing.
The identification, growth, reproduction, distribution, evolution and economic importance of the algae. Field trips will be made.
412. **Advanced Plant Pathology I (5).** Lec. 2, Lab. 6. Spring, odd years. Pr., BY 309 or equivalent and junior standing.
Techniques and methodology used in the study of plant pathogens, particularly fungi, bacteria, viruses, and nematodes, and the diseases they cause.
413. **General Plant Ecology (5).** Lec. 3, Lab. 4. Fall and Spring. Pr., BY 306 and junior standing.
Natural vegetation, environment, and interrelationships between the two with primary emphasis on the Southeastern United States. Field trips will be made.
414. **Plant Morphology (5).** Lec. 3, Lab. 4. Spring. Pr., BI 101-2 or equivalent and junior standing.
Morphology of the principle plant groups concerning their structure, reproduction, and evolutionary relationships.
415. **Developmental Plant Anatomy (5).** Lec. 3, Lab. 4. Winter. Pr., BI 101-2 or equivalent and junior standing.
Comparative anatomy of vascular plants with emphasis on structures and developmental relationships.
416. **Biological Microscopy, Microtechnique, and Photography (5).** Lec. 2, Lab. 6. Pr., permission of instructor.
Various forms of optical microscopy; micromanipulation; micrometry; drawing with the microscope. Microobservation; whole-mounts; dissociation; sectioning by freezing and embedding techniques. Vital, in-situ, smear, squash, and section staining. Macro- and micro-photography with still, cine, and lapse-time equipment. Photographic illustration for publication and lantern slide presentation.
419. **Principles in Plant Disease Control (3).** Lec. 2, Lab. 2. Spring, even years. Pr., BY 309 and junior standing.
Designed to acquaint the student with such principles of plant disease control as protection, exclusion, eradication, and resistance. The control of important plant pathogens will be considered by each method. Emphasis will be placed on chemical control with antibiotics, fumigants, and fungicides.
420. **Weed Identification and Control (5).** Lec. 3, Lab. 4. Spring. Pr., BI 101-2 or equivalent and junior standing.
Recognition of the more noxious weeds, their ecology, habit of growth, dissemination and the evaluation of the various methods of control.
430. **Plant Nematology (5).** Lec. 2, Lab. 6. Winter, even years. Pr., BY 309, BI 101 or permission of instructor and junior standing.
Various roles of nematodes in relation to plant diseases caused by the nematodes and other pathogens. Identification of the plant-nematodes nature of pathogenicity; principles and practices of control; recent advances in phytonematology.
460. **Special Problems (1-3).** All quarters. Pr., senior standing and consent of instructor.
A. Anatomy; B. Ecology; C. Morphology; D. Pathology; E. Physiology; F. Taxonomy. A student cannot register for more than 3 hours credit.

GRADUATES ONLY, MAJOR OR MINOR

601. **Biological Statistics II (5).** Lec. 4, Lab. 2. Winter. Pr., BY 401 or equivalent.
Analysis of variance, randomized block, Latin square and split plot designs, factorials, analysis of covariance, and multiple regression.
602. **Least Squares Analysis of Experiments (5).** Lec. 4, Lab. 2. Spring, even years. Pr., BY 401 and BY 601 or equivalent.
Analysis and interpretation of experimental data by least squares procedures; general linear models and hypotheses; weighted regression; irregular two-factor design.
604. **Advanced Plant Physiology I (5).** Lec. 3, Lab. 4. Fall. Pr., BY 306 and 10 hours of organic chemistry.
Molecular biology and plant metabolism; a correlation of the fine structures of the cell with metabolic pathways occurring therein.
605. **Advanced Plant Physiology II (5).** Lec. 3, Lab. 4. Winter. Pr., BY 604 or equivalent.
Water relations and mineral nutrition. Internal and external factors affecting the absorption, translocation, utilization, and loss of water and mineral elements by green plants.
606. **Advanced Plant Physiology III (5).** Lec. 3, Lab. 4. Spring. Pr., BY 604 or equivalent.
Plant growth. A review of literature and laboratory methodology of plant physiological subject matter in the areas of plant growth regulators, mode of action of growth regulators, and factors affecting plant growth.

608. **Advanced Systematic Botany (5).** Lec. 2, Lab. 6. Fall. Pr., BY 406.
Experimental and research aspects of the taxonomy of vascular plants. The literature, techniques and methodology relative to the identification and biosystematic classification of evolutionary units; intensive study of special groups of plants and the application of resultant data to specific taxonomic problems.
609. **Advanced Mycology (5).** Lec. 2, Lab. 6. Spring, odd years. Pr., 405 and consent of instructor.
Identification and classification of fungi. Field trips will be made.
611. **Ecology of Soil Fungi (5).** Lec. 2, Lab. 6. Spring, even years. Pr., BY 309, BY 609.
Quantitative and qualitative consideration of the microbial population of the soil. Relation of physical environment, antagonistic microorganisms, and higher plants on growth and survival of soil fungi. Emphasis will be on methodology for studying soil microflora and plant disease relationships.
612. **Physiology and Biochemistry of Fungi (5).** Lec. 3, Lab. 4. Winter. Pr., 10 hours of microbiology and 5 hours of biochemistry.
Biochemical activities of fungi as related to their nutrition, growth, reproduction and fermentative abilities.
614. **Plant Ecosystems (5).** Lec. 3, Lab. 4. Pr., BY 413. Summer.
Plant ecosystems and the effects of current technology on these systems. Problems relating to pollution and maintaining a quality environment will be covered.
615. **Morphology of Angiosperms (5).** Fall. Lec. 3, Lab. 4. Pr., BY 414.
Principles of angiosperm reproduction with emphasis on structure and evolution.
616. **Cytology and Cytogenetics (5).** Lec. 3, Lab. 4. Winter. Pr., ZY 300.
Cell structure and function with emphasis on cell reproduction and factors contributing to the evolution of organisms.
617. **Phytovirology (5).** Lec. 3, Lab. 4. Winter, odd years. Pr., BY 309 or 310, VM 495.
To acquaint students with viruses as plant pathogens and the diagnosis and control of diseases caused by them. Laboratory will involve methodology in the transmission, isolation, and characterization of viruses which infect plants.
618. **Clinical Plant Pathology (5).** Lec. and Lab. 8. Summer, even years. Pr., BY 412 or equivalent or consent of instructor.
Identification, epidemiology, etiology, and control of the major diseases on various kinds of economic plants, to be selected on the basis of current needs of the students.
619. **Advanced Plant Pathology II (5).** Lec. 3, Lab. 4. Summer, odd years. Pr., BY 309 or equivalent.
Biological significance of etiology, epiphytology, and host-parasite relations in plant diseases. Classical and current theory will be considered in relation to concepts and problems in plant pathology.
620. **Chemical Weed Control (5).** Lec. 3, Lab. 4. Fall or Summer, odd years. Pr., BY 306, BY 406 or 420, or AY 414.
Application, mode of action, physiological relationships, recent advances, and special weed problems.
625. **Special Problems. Credit to be arranged.**
A. Cytology; B. Ecology; C. Morphology; D. Mycology; E. Nematology; F. Pathology; G. Physiology; H. Taxonomy; I. Chemical Weed Control; J. Marine Botany; K. General Biology Teaching; L. Virology.
635. **Biological Processes (5).** Lec. 5. Summer. Pr., BI 101-2, CH 104, teaching experience and graduate standing.
Acquaints teachers of biology with the principal life-processes of cells, such as photosynthesis, respiration and assimilation, and the organelles within which these proceed.
636. **Microbiology (5).** Lec. 3, Lab. 4. Summer. Pr., teaching experience.
Structure and activities of microorganisms, their distribution and cultivation. The algae, fungi, bacteria, and protozoa are considered particularly as they relate to animal and plant disease, food, industrial uses, sanitation, and immunization.
640. **Departmental Forum (1).** Fall, Winter and Spring. Required of all majors, open to all minors.
Discussions concerning current topics in the various sciences and related fields.
641. **Seminar in Plant Physiology (1).** Fall, Winter, and Spring. May be taken more than once for credit.
650. **Nuclear Science in Agriculture (5).** Lec. 3, Lab. 4. Spring. Pr., graduate standing with research experience.
Role of nuclear science in agricultural research with training in the use of radioisotopes and familiarization with the possibilities, limitations, and necessary safety precautions.
699. **Research and Thesis. Credit to be arranged.** May be taken more than one quarter.
799. **Doctoral Research and Dissertation. Credit to be arranged.**

Building Technology (BT)

Professors Brandt, Head, Marty, and Orr
Associate Professors Darden and Timberlake
Assistant Professor Householder
Instructor Fretwell

101. **Introduction to Building (3). Lab. 9.**
Survey of the building industry; building procedures; study of plans and details; use of drawing tools; elements of estimating. Lectures, readings, drawings.
102. **Drawing and Projections (3). Lab. 9.**
Application of geometry to orthographic, isometric, cavalier, cabinet, and perspective projections. Exercises in working drawings.
206. **Materials and Construction (5). Pr., BT 101 or consent of instructor.**
Structural and finish materials and assembly systems used in buildings. Lectures, reports, readings, drawings.
220. **Mechanics of Structures (5). Pr., PS 205, MH 263.**
Principles of mechanics as applied to building construction, graphic statics; resolution of external forces; analysis of trusses; centroids; moments of inertia; friction. Lectures, demonstrations, problems.
- 311-12-13. **Structures I-II-III (3-3-3). Pr., BT 220.**
Statically determinate structures including beams, columns, trusses, struts, and tension members. Shear and bending moments, torsion, slope and deflection. Problems worked in wood, reinforced concrete, steel and other structural materials. Lectures, research and problems.
321. **Construction Problems I (5). Lab. 15. Pr., BT 220.**
Solution of practical problems normally encountered on the construction project. Layouts, earthwork calculations, formwork design, concrete mix design, and materials storage and handling problems. Construction equipment and manpower resource allocation. Demonstrations, research, reports.
- 361-62-63-64. **History of Building I-II-III-IV (3-3-3-3). Pr., BT 206.**
An analysis of the development and use of construction methods and materials showing the effects of this development on building form from ancient to contemporary times. Illustrated lectures, readings, reports and drawings.
- 411-12-13. **Structures IV-V-VI (3-3-3). Pr., BT 313.**
Continuation of Structures I-II-III in the field of statically indeterminate structures. Consideration of lateral stability in buildings. Design of foundations. Lecture, research and problems.
- 414-15-16. **Advanced Structures I-II-III (5-5-5). Pr., BT 413.**
Theory and practical design of complex and long span structures, both in steel and reinforced concrete. Multiple story buildings, towers, arches, vaults, domes, thin shell systems, foundations. Lectures, research and problems.
422. **Construction Problems II (5). Lab. 15. Pr., BT 312 and 321.**
Individual projects relating to current industry practices. Topics such as prefabrication analysis, high-rise construction, lease vs. purchase of equipment, effect of admixtures in concrete, optimum usage of construction equipment, and time and motion analysis. Lectures, research reports, oral presentations.
433. **Construction Methods and Estimating I (5). Pr., BT 206, 312 and 321.**
Material quantities, estimating, builder's organization and procedure, job records, builder's liability, labor relations, safety precautions, project management. Preparation of cost analysis and bid from working drawings. Lectures, problems.
434. **Construction Methods and Estimating II (5). Pr., BT 433.**
The use of the Critical Path Method (CPM) for scheduling construction projects. Precedence relationships, updating cost control and cash flow, financial forecasts, manpower and equipment allocation, computer applications, job management. Lectures, problems.
- 452-53. **Building Equipment I-II (3-3). Pr., PS 206.**
Description and analysis of heating, air conditioning, water supply, plumbing, electrical wiring, motors, elevators, and illumination as related to buildings. Lectures, demonstrations, readings, problems.
490. **Building Construction Thesis (7). Lab. 21. Pr., BT 422, 434 and 4th year standing, third quarter. Admission only upon recommendation of the Faculty Thesis Committee.**
Preparation of detailed cost estimates and construction program of a building, selected with departmental approval; report to include description of building and site, list of quantities of materials, unit prices of materials and labor, detailed cost sheets; bid and contract forms, construction schedule, and methods required. (Candidate will defend thesis orally before staff and guest specialists.)
541. **Building Equipment III (2). Lab. 6. Pr., BT 453 and AR 403.**
A continuation of Building Equipment I and II in selected laboratory problems.

Chemical Engineering (CN)

Professors Hsu and Wingard
Associate Professors Taylor, Head, Hirth, and Vives
Assistant Professor Askew

101. **Chemical Engineering Fundamentals I (1). Lab. 3.**
A work shop in the use of the slide rule, blue print reading, lettering, graphs and graphing, and interconversion of units.
200. **Digital Computers (2). Lec. 1, Lab. 3.**
Workshop on digital computer programming in the area of chemical engineering.
300. **Material and Energy Balances I (3). Pr., CH 113, PS 220.**
Chemical Engineering process calculations, material and energy balances.
301. **Material and Energy Balances II (3). Pr., CN 300.**
A continuation of CN 300.
302. **Chemical Engineering Analysis (3). Lec. 3. Pr., MH 362.**
Application of mathematical principles and techniques to the analysis and solution of typical chemical engineering problems.
324. **Momentum Transport I (3). Lec. 3. Coreq., CN 302.**
Includes conservation equations, momentum transfer in laminar flow, turbulence, dimensional analysis, design calculations for conduits, packed beds, fluidized systems and filtration.
326. **Energy Transport II (5). Lec. 3, Lab. 6. Pr., CN 324.**
Includes heat conduction, heat transfer in laminar flow, turbulent heat transfer, analogy between heat and momentum transfer, boiling and condensing vapor, design calculations on heat transfer equipment and evaporation, and also laboratory work in Momentum and Energy Transport.
390. **Introduction to Chemical Engineering Thermodynamics I (3). Jr. standing and/or CH 408.**
First and second laws. Emphasis on real gases and non-ideal systems. P-V-T relations and equations of state, entropy and energy function changes for different processes, methods for evaluation of energy functions, generalized methods based on the corresponding states.
401. **Chemical Engineering Economics (2). Pr., junior standing.**
The economic factors affecting the design, operations, and economic aspects of industrial chemical processing, including cost estimation and feasibility studies.
423. **Stagewise Processes (4). Lec. 3, Lab. 3. Pr., CN 424.**
Theory and design methods of stagewise processes to include analytical, graphical and computer-oriented finite difference methods in such processes as extraction, leaching and distillation. Laboratory work in stagewise processes.
424. **Mass Transport III (5). Lec. 3, Lab. 6. Pr., CN 423.**
Laminar and turbulent mass transfer, gas absorption, humidification and distillation. Laboratory experiments in binary and multi-component batch and continuous distillation.
430. **Analog Computation (3). Pr., MH 265, EE 262.**
The basic principles of analog computer theory and programming applications to chemical engineering. Includes time and amplitude scaling.
432. **Process Dynamics and Control (5). Lec. 3, Lab. 6. Pr., CN 302, CN 326, CN 430, and senior standing.**
Dynamic analysis of chemical processes. Principles of closed loop feedback control theory, stability, root locus, and frequency response. Use of analog computer for process simulation and mathematical modeling.
440. **Nuclear Engineering (5). Pr., senior standing in science or engineering and B average except by special permission.**
Atomic physics and nuclear reactions. Nuclear reactor principles design, and engineering including radiation, shielding, instrumentation, and heat transfer.
450. **Special Topics in Chemical Engineering (Credit to be arranged with a maximum of 10 hours.)**
Directed reading covering items of chemical engineering theory in depth coupled with individual laboratory work. May be taken more than once.
460. **Introduction to Plastics (3). Lec. 3. Pr., CH 304 or permission of instructor.**
High polymers. Includes the chemistry, technology and uses of cellulose, phenolics and amino plastics, polyolefins, vinyls, styrene, acrylics, polyesters, epoxies, polyamides, polyurethanes, silicones and rubbers.
470. **Seminar (1). Senior standing.**
May be taken for credit twice.
475. **Rate Processes in Materials (3). Lec. 3. Pr., CH 408 or permission of instructor.**
Diffusion in the gas, liquid and solid phases and the fundamentals of chemical reaction kinetics pertinent to the crystallization and transformation of materials.

484. **Chemical Engineering Plant Design (4).** Lec. 2, Lab. 6. Pr., CN 401, CN 425, CN 490, and senior standing.
Individuals or small groups design optimum plant. Includes consideration of alternates, equipment selection and sizing, plant layout, and cost analyses. Comprehensive problems usually include heat, materials and economic balances, unit operations and processes, kinetics, and thermodynamics. Some consideration is given to statistics.
490. **Chemical Engineering Thermodynamics (5).** Lec. 5. Pr., CN 390.
Treatment of non-ideal gaseous and liquid systems. Process steam, liquefaction and refrigeration. Excess entropy and excess free energy in mixing. Chemical reaction equilibrium. Statistical interpretation of entropy and energy functions.
491. **Applied Chemical Kinetics (4).** Lec. 4. Pr., CN 490.
Rates of reactions of various orders and complex reactions in respect to the design of chemical reactors. Considered also are catalytic reaction mechanisms and transfer of mass and heat affecting reactor design and operations.

COURSES PRIMARILY FOR GRADUATE STUDENTS

601. **Transport Phenomena I (5).** Pr., CN 423, CN 424 or equivalent.
Momentum and energy transport, mechanisms of viscosity and thermal conductivity, velocity and temperature distribution in laminar and turbulent flow, equations of change, interphase transport, macroscopic balances.
602. **Transport Phenomena II (5).** Pr., CN 601.
A continuation of CN 601.
603. **Transport Phenomena III (5).** Pr., CN 602.
Mass transport, mechanism of diffusivity, concentration distribution in solids, laminar and turbulent flow, multi-component systems.
604. **Chemical Engineering Thermodynamics I (5).** Pr., CN 490 or equivalent.
Emphasis on properties of actual gases, energy functions and engineering applications, molecular theory of fluids, complex non-ideal systems.
605. **Chemical Engineering Thermodynamics II (5).** Pr., CN 604.
Emphasis on physical and chemical equilibria for complex systems statistical treatment of thermodynamic relations, non-equilibrium thermodynamics.
606. **Chemical Engineering Kinetics I (5).** Pr., CN 491 or equivalent.
Analysis of complex chemical reactions, reaction mechanisms, homogeneous and heterogeneous catalysis, effect of various physical factors, reaction scale-up, industrial reactors.
609. **Petroleum Refining Engineering (5).** Pr., CH 304, CN 424 or equivalent.
Composition of petroleum, evaluation of oil stocks, refinery processes, design of refinery equipment, corrosion problems, treatment of petroleum products, petrochemicals, economic aspects of petroleum industry.
610. **Advanced Physical Metallurgy (5).** Lec. 4, Lab. 3. Pr., CN 426.
Heat treatment of ferrous and non-ferrous metals including microscopic studies. Recent developments also are included. This course is open by special permission to seniors who have credit for CN 426.
611. **Advanced Kinetics and Principles of Reactor Design (5).** Pr., CN 605.
612. **Process Dynamics and Control I (5).** CN 432 or equivalent.
Control responses, applications of Laplace transforms, control system design, frequency response, distributed parameters, linearizing procedure.
613. **Process Dynamics and Control II (5).** Pr., CN 612.
Analysis of process dynamics stability analysis, optimizing control, data handling, digital computer control.
614. **Heat Transmission I (5).** Pr., graduate standing.
Dynamics of chemical engineering processes and operations, such as reactors, heat exchangers, flow-storage systems, and diffusional operations. This course deals primarily with the mathematical study of automated systems and some of the aspects of computer control.
615. **Heat Transmission II (5).** Pr., graduate standing.
Boiling heat transfer, condensing vapor, natural convection, extended surfaces, radiation heat transfer, packed bed, exchanger design analysis.
631. **High Polymer Science and Technology (5).** Pr., CH 304, CN 424 or equivalent.
Structure of polymers, molecular forces and properties, polymer formation and modification, kinetics of polymerization, rheology of polymers, specific polymers such as fibers, rubbers, coatings, and adhesives, fabrication method.
650. **Special Topics and Chemical Engineering (credit TBA).**
Special topics covering in depth scientific industries or types of unit processed may be given as directed reading, lectures or a combination of both. Maximum total credit 5 hours.
670. **Seminar (1).** Pr., graduate standing.
May be taken from one to five quarters for credit.
699. **Research and Thesis.** Credit to be arranged.

Chemistry (CH)

Professors Colburn, Head, Baker, Capps, Kosolapoff, Land, Melius, Nichols,

*Price, Saunders, Stevens, and Ward

Associate Professors Barksdale, Dinius, Greene, Johnson, Peterson, Teggin, and Ziegler

Assistant Professors Friedman, Mountcastle, Neely, Shevlin, and Wheatley

101. **Introductory Chemistry I (2).** Lec. 4. Pr., or Coreq., MH 159, MH 160, or MH 161.

To acquaint science students with the classifications of matter and the manner in which the chemist identifies matter and records the nature of its changes. Atomic structure, chemical bonding, molecular aggregations and the laws summarizing the properties and nature of the physical states of matter are considered.

102. **Introductory Chemistry II (2).** Lec. 3. Pr., CH 101, Coreq., CH 103L.

A continuation of the topics described under CH 101.

103. **Fundamentals of Chemistry I (4).** Lec. 4. Pr., high school chemistry, Coreq., MH 160, or MH 161, CH 103L.

Encompasses the subject matter of CH 101 and CH 102 for the superior student with adequate background preparation. Assignment of this course is based upon certain placement criteria and departmental approval is required.

- 103L. **General Chemistry Laboratory (1).** Lab. 3. Coreq., CH 102 or CH 103.

The basic laboratory techniques, to experimental measurements, and to the interpretation of data.

104. **Fundamentals of Chemistry II (4).** Lec. 4. Pr., CH 103 or CH 102, Coreq., CH 104L.

A continuation of CH 102 or CH 103. The methods of preparation and the reactions of individual as well as classes of chemical compounds are used to study and illustrate the mechanism and dynamics of chemical change.

- 104L. **General Chemistry Laboratory (1).** Lab. 3. Pr., CH 103L, Coreq., CH 104.

A continuation of CH 103L.

105. **Fundamentals of Chemistry III (3).** Lec. 3. Pr., CH 104, Coreq., CH 105L.

The chemistry of certain elements. Special emphasis is placed on the principles of ionic equilibria, solubility product, acid-base phenomena, and oxidation-reduction processes.

- 105L. **General Chemistry Laboratory (2).** Lab. 6. Coreq., CH 105.

Laboratory work in qualitative analysis.

111. **General Chemistry (5).** Lec. 4, Lab. 3. Pr., Coreq., MH 160, or MH 159, or MH 161. Credit in CH 101, 102 or 103 precludes credit for this course.

For chemistry majors and others in closely related areas.

112. **General Chemistry (5).** Lec. 4, Lab. 3. Pr., CH 111 or CH 103. Credit in CH 104 precludes credit for this course.

Continuation of CH 111.

113. **General Chemistry (5).** Lec. 3, Lab. 6. Pr., CH 104 or CH 112. Credit in CH 105 and 105L precludes credit for this course.

Continuation of CH 112. Laboratory work covers qualitative analysis.

201. **Descriptive Chemical Science (5).** Lec. 5. Pr., MH 159.

To foster in the non-science student an appreciation for the chemical nature of the material universe and the contribution of chemistry to his cultural heritage. This course will not serve as a prerequisite for any other chemistry course.

203. **Organic Chemistry (5).** Pr., CH 104.

Fundamentals of organic chemistry. Designed for students in Home Economics, and others.

204. **Analytical Chemistry (3).** Lec. 3. Each quarter. Pr., CH 105 and CH 105L or CH 113.

Theory and application of gravimetric, volumetric, and colorimetric chemical analysis.

- 204L. **Analytical Chemistry Laboratory (2).** Lab. 8. Each quarter. Pr. or Coreq., CH 204.

Analytical techniques applied to the analysis of ores and minerals.

205. **Analytical Chemistry (5).** Lec. 3, Lab. 6. Pr., CH 204.

Fundamental concepts used in analytical chemistry and observed in the laboratory via gravimetric analysis and separation techniques.

207. **Organic Chemistry (5).** Lec. 4, Lab. 3. Each quarter. Pr., CH 104.

This course together with CH 208 meets the needs of students in Laboratory Technology, Pre-Medicine, Pre-Dentistry, Pre-Veterinary, Pharmacy, and students in other biological sciences.

208. **Organic Chemistry (5).** Lec. 3, Lab. 6. Each quarter. Pr., CH 207.

Continuation of CH 207.

209. **Organic Chemistry (5).** Lec. 5. Pr., CH 208.

A continuation of CH 208 with emphasis on the study of those organic compounds considered to be the most important to the understanding of biochemistry; i.e., polyfunctional compounds, carbohydrates, liquids, amino acids, proteins, and heterocyclic compounds.

*Retirement effective Dec. 31, 1969. Deceased Feb. 11, 1970.

301. Biochemistry (5). Lec. 4, Lab. 3. Pr., CH 208. Credit in CH 418 precludes credit for this course.
Especially designed for students in Pharmacy.
302. Biochemistry (4). Pr., CH 301. Credit in CH 419 precludes credit for this course. Continuation of CH 301.
303. Organic Chemistry (5). Lec. 4, Lab. 3. Pr., CH 113.
Organic chemistry covering nomenclature, group reactions, important theories and concepts relating to aliphatic and aromatic compounds, designed primarily for chemistry majors.
304. Organic Chemistry (5). Lec. 3, Lab. 6. Pr., CH 303.
Continuation of extension of CH 303.
305. Organic Chemistry (5). Lec. 3, Lab. 6. Pr., CH 304.
Continuation and extension of CH 303-304, including heterocyclic compounds and many classes of compounds of interest in the field of biochemistry.
316. Physical Chemistry (5). Pr., MH 159 or MH 160, CH 105 and PS 205.
A one-quarter course for pre-medicine students.
401. Chemistry for High School Science Teachers (5). Lec. 4, Lab. 3. Summer. Pr., teaching experience.
404. Organic Analysis (Qualitative) (5). Lec. 3, Lab. 6. Pr., CH 305 or equivalent and junior standing.
After performing identification tests on known compounds, the student identifies pure organic unknowns, and separates and identifies the compounds of mixtures. Graduate students identify more unknowns than required of undergraduates.
407. Physical Chemistry (5). Lec. 4, Lab. 3. Pr., CH 104 or CH 112; MH 264; PS 221 or 206; and junior standing.
A discussion of the more important theories and laws of physical chemistry.
408. Physical Chemistry (5). Lec. 4, Lab. 3. Pr., CH 407, and junior standing.
Continuation of CH 407.
409. Physical Chemistry (5). Lec. 4, Lab. 3. Pr., CH 408 and junior standing.
An extension of principles studied in CH 407-8 with special reference to modern theories of the structure of matter.
410. Intermediate Inorganic Chemistry I (5). Lec. 5. Pr., CH 408 and junior standing.
Atomic structures, valence bonding, and periodic properties of the elements.
411. Intermediate Inorganic Chemistry (5). Lec. 3, Lab. 6. Pr., CH 410 and junior standing.
Synthesis and purification of typical inorganic compounds.
412. Chemical Thermodynamics (5). Pr., CH 408, and junior standing.
Basic laws governing changes in energy in gases, liquids, and solids.
413. Analytical Chemistry (5). Lec. 3, Lab. 6. Pr., CH 409, and junior standing.
Fundamental concepts used in instrumental analytical chemistry and as observed in the laboratory via spectrophotometric, electroanalytical, and chromatographic techniques.
415. Polymer Technology (4). Lec. 3, Lab. 3. Pr., CH 304 or CN 460 and junior standing.
Important aspects of polymer science, connection between chemical structure and important properties of modern plastics and synthetic structural materials, the common methods of fabrication of these into articles and the basic chemistry behind their manufacture.
- 418-419-420. Biochemistry (5-5-5). Lec. 4, Lab. 3. Pr., CH 208, and junior standing.
A standard year-course in the principles of biochemistry.
490. Special Problem in Chemistry (5). Lab. 15. Pr., consent of instructor and senior standing. Not open to graduate students.
An individual problem course. Each student will work under the direction of a staff member on some problem of mutual interest.

GRADUATE COURSES

601. Selected Topics in Chemistry (5). Lec. 4, Lab. 3. Pr., CH 401 or equivalent.
Modern topics in general chemistry and a short review of organic chemistry.
610. Advanced Inorganic Chemistry (5). Pr., CH 410 or equivalent.
Selected groups of inorganic compounds are considered from a modern physicochemical viewpoint; thus emphasizing their chemical and physical properties, their rates of conversion one into another, their molecular structure, and valence relationships.
611. Advanced Topics in Inorganic Chemistry (5). Pr., CH 610 or equivalent.
A consideration of the relationship of inorganic chemistry to atomic structure in terms of recent theoretical developments.
612. Inorganic Preparations (5). Lab. 15. Pr., CH 610 or CH 611.
The preparation of typical inorganic compounds illustrating special and more advanced techniques.
614. The Chemistry of Coordination Compounds (5). Pr., CH 410 or equivalent.
Complex inorganic compounds with emphasis on early and modern developments, isomerism, chelation, and methods of determining formation constants.

616. **Inorganic Reaction Mechanisms (5).** Pr., CH 410 or equivalent.
Factors affecting the rates of inorganic reactions in solution.
620. **Organic Chemistry (5).** Pr., CH 305 or equivalent.
This one quarter course is designed to bring the new graduate student to the understanding of the terminology of modern organic chemistry with coverage of the principal properties and reactions of organic compounds. Reaction mechanisms and modern experimental methods of structural determination are stressed.
621. **Organic Chemistry (5).** Pr., CH 620 or equivalent.
Advanced modern organic chemistry.
622. **Quantitative Organic Analysis (5).** Lec. 2, Lab. 6. Pr., CH 621 or equivalent.
General methods for the quantitative determination of elements and functional groups in organic compounds.
623. **Heterocyclic Compounds (5).** Pr., CH 621 or equivalent.
Organic compounds containing heterocyclic ring systems.
624. **Element-Organic Compounds (5).** Pr., CH 621 or equivalent.
Organic chemistry of Groups III, IV and V elements.
625. **Organic Nitrogen Compounds (5).** Pr., CH 621 or equivalent.
Organic compounds containing nitrogen.
627. **Special Topics in Organic Chemistry (5).** Pr., CH 621 or equivalent.
A selection of modern topics in organic chemistry.
628. **Introduction to Theoretical Organic Chemistry (5).** Pr., CH 621 or equivalent.
Topics generally considered include molecular structure; chemical reactions and energy change; structure-reactivity relationships; dipole moments and carbonium, olefinic and free-radical stability; and organic chemical spectroscopy.
- 630-631. **Advanced Physical Chemistry (5-5).** Pr., CH 409. CH 630 is pr. for CH 631.
Topics generally considered include kinetic theory of matter, modern theories of the structure of matter, generalized thermodynamics, relation of molecular structure to spectroscopic and thermodynamic properties, and kinetics of chemical reactions.
632. **Relation Between Structure and Properties of Chemical Substances (5).** Pr., CH 631.
Established relationships that exist between structures of organic and inorganic compounds and physical properties which are relatively easy to determine. The principal aim is the demonstration of the fundamental relation of structure of compounds and electronic configurations.
633. **Chemical Kinetics (5).** Pr., CH 631.
The mathematics and characterization of chemically reacting systems include discussions of the collision theory, the transition state theory, unimolecular reactions in condensed phases, behavior of nonstationary-state systems, and photochemistry.
634. **Heterogeneous Equilibria (5).** Pr., CH 631.
Chemical and physical equilibria in heterogeneous systems.
636. **Statistical Thermodynamics (5).** Pr., CH 631.
Statistical approach to thermodynamics and chemical equilibrium.
637. **Introduction to Quantum Chemistry (5).** Pr., CH 631.
Quantum theory as applied to chemical problems.
638. **Molecular Spectroscopy (5).** Pr., CH 631.
Theory and application of optical and magnetic resonance spectroscopy.
640. **Carbohydrates (5).** Pr., CH 418 or equivalent.
The chemistry of the mono- and polysaccharides.
641. **Amino Acids and Proteins (5).** Pr., CH 418 or equivalent.
Chemistry of the amino acids and proteins.
642. **Lipids (5).** Pr., CH 418 or equivalent.
Chemistry of the lipids and their biological significance.
643. **Enzymes (5).** Pr., CH 419 or equivalent.
Physical and chemical properties and mechanisms of action of enzymes and their role in metabolic reaction.
644. **Intermediate Metabolism (5).** Pr., CH 419 or equivalent.
Metabolism of the carbohydrates, lipids, and amino acids.
645. **Biochemical Research Techniques (5).** Lec. 2, Lab. 6. Pr., CH 420 or equivalent.
To acquaint the graduate students in chemistry, biochemistry, and the biological sciences with the modern techniques used in biochemistry.
646. **Physical Biochemistry (5).** Pr., CH 305 and CH 409 or equivalents.
The structure and properties of biological compounds (saccharides, lipids, amino acids, proteins, nucleic acids, and enzymes) are studied. The bioenergetics of the important metabolic pathways are also investigated. Emphasis will be on structure of biological compounds and mechanisms of biological reactions.
650. **Analytical Chemistry (5).** Pr., CH 413 or equivalent.
Analytical principles, applications and methods, mathematical interpretations, and current developments.

651. Analytical Chemistry (5). Lec. 4, Lab. 3. Pr., CH 413.
Analytical application of chemical spectroscopy.
652. Theories and Current Topics of Analytical Chemistry (5). Winter quarter, odd years. Pr., CH 651.
653. Physio-chemical Separations (5). Lec. 4, Lab. 3. Spring quarter, even years. Pr., CH 409.
654. Radiochemical Analysis (5). Lec. 3, Lab. 6. Summer quarter, odd years. Pr., CH 205.
The application of radioactive tracers and related techniques to chemical analysis.
670. Seminar (1). May be repeated for a maximum of 10 credit hours. Each quarter except Summer.
Required course for all graduate students in chemistry.
691. Directed Individual Study in Contemporary Chemistry. (Credit to be arranged.) Pr., completion of 30 hours of graduate courses in chemistry. May be repeated for credit.
699. Research and Thesis. (Credit to be arranged.) May be repeated for credit.
799. Doctoral Research and Dissertation. (Credit to be arranged.)

Civil Engineering (CE)

Professor Rainer, *Head*, Bransford, and Hudson

Associate Professors Blakney, Gibson, Krishnamurthy, and Warman

Assistant Professors Judkins, Kraft, and Peterson

Instructors Crane and Seibenhener

200. Introduction to Civil Engineering (1). Pr., sophomore standing.
The Civil Engineer and his relation to society; objectives of the Civil Engineering curriculum; sub-disciplines in Civil Engineering; technical and professional engineering societies; publications; guest lecturers.
201. Surveying (5). Lec. 4, Lab. 3. Pr., MH 162 and CE 202 (or concurrently).
Data collection and analysis emphasized. Analysis of errors; simple curves, vertical curves, spirals; topographic mapping and land surveying.
202. Introduction to Computer Methods in Civil Engineering (3). Lec. 2, Lab. 3. Pr., MH 265 (or concurrently).
Introduction to electronic digital computer programming; machine solution of civil engineering problems; library programs.
301. Transform Methods in Engineering Analysis (5). Pr., CE 202, MH 265.
Applications of differential operator and Laplace transform methods to analysis of physical systems described by differential and integral equations; gamma and Bessel functions, Fourier Series, and orthogonality of functions, partial differential equations, finite difference methods, Z-transforms.
304. Theory of Structures I (5). Pr., ME 207, CE 301.
Analysis of statically determinate trusses, beams and frames. Loads, reactions, internal forces, shears, and moments. Influence lines. Beam slopes and deflections by integration, moment area and conjugate beam methods. Stress distribution due to axial force, bending and shear. Introduction to column buckling.
305. Water Supply and Disposal Systems (5). Lec. 4, Lab. 3. Pr., CE 308.
Theory and design of water collection and distribution facilities and waste-water collection systems. Laboratory includes fundamental tests relating to both water supply and waste-water treatment. Emphasis placed on theory and significance of the tests.
308. Hydraulics (5). Lec. 4, Lab. 3. Pr., ME 340.
Ideal fluid flow, real fluids, fluid resistance; fluid measurement and control; steady pipe flow, steady open channel flow; unsteady flow. Emphasis on steady flow and open channel flow.
314. Photogeology for Engineers (5). Lec. 4, Lab. 3. Pr., CH 104, CE 201.
Photographic materials and nomenclature; petrology; physical geology; use of aerial photography in interpretation of culture, petrology, structural geology, geomorphology and hydrology for resource development.
320. Fundamentals of Transportation Engineering (5). Pr., EC 200, CE 201, or CE 301.
An introduction to the planning, design, construction, and maintenance of surface and air transportation facilities. Economic analysis and evaluation; contracts and specifications.
380. Theory of Structures II (5). Pr., CE 304.
Strain energy principles, and their application to the determination of deflections of trusses, and rotations and displacements of beams and frames, under axial force, bending, shear and torsion. Reciprocal theorem. Analysis of indeterminate structures by method of consistent deformation, moment distribution, and slope deflection.
400. Advanced Surveying and Mapping (5). Lec. 4, Lab. 3. Pr., CE 320, junior standing.
Photogrammetric principles and mensuration are emphasized. Selected topics from map projections, electronic, special instruments, and geodesy.

404. **Structural Analysis (4).** Pr., CE 380, senior standing.
Working stress and ultimate strength theories. Principles of stress analysis of structural members of structural steel, reinforced concrete, prestressed concrete and other structural materials. Properties of common structural materials.
405. **Water and Waste Water Treatment (5).** Pr., CE 305, junior standing.
Theory, design, construction, and operation of water treatment and waste-water disposal facilities considered on a unit operation basis.
407. **Municipal Engineering I (3).** Pr., senior standing.
Duties and responsibilities of city engineer and municipal consultant; problems connected with promoting, financing, designing, and constructing municipal improvements.
408. **Engineering Foundations (3).** Pr., CE 404, CE 418, CE 314, senior standing.
Application of geology, soil mechanics, and structural theory to the design of foundations such as footings, piles, pile groups, retaining walls, abutments, and bridge piers. Review reports on current articles in technical publications.
409. **Environmental Health Engineering (5).** Pr., senior standing.
Application of engineering methodology to communicable disease control, insect and rodent control, milk and food sanitation, institutional and housing hygiene, swimming pool sanitation, rural sanitation, industrial hygiene, refuse collection and disposal, radiological sanitation, and air pollution.
410. **Transportation Engineering (5).** Pr., CE 320 and IE 211.
Surface and air transportation systems. Planning; economic analyses; traffic studies.
411. **Flow in Open Channels (5).** Pr., CE 308 or ME 341, junior standing.
Uniform flow, rapidly varied flow, gradually varied flow, subcritical transitions, surges, supercritical transitions, bends, precipitous slopes, energy dissipation, spillways, and oscillatory waves.
412. **Hydrology (5).** Pr., CE 308 or ME 341, junior standing.
Precipitation, runoff, flood routing, flood control, river regulation, and coastal engineering problems.
413. **Hydraulic Structures (5).** Pr., CE 308 or ME 325, senior standing.
Dams, spillways, outlet works, gate structures, locks, structures for river regulation, canals, structures for shore protection, port facilities.
414. **Structural Steel (4).** Pr., CE 404.
Analysis and design of steel members in tension, compression, shear and flexure, and for combined effects. Elastic and plastic theories. Design of trusses, frameworks and connections. Plastic design of multi-story frames.
415. **Construction Planning (5).** Pr., CE 301 and junior standing.
The construction process as a system; organization of construction engineering functions; financial analysis; cost concepts and elements in pricing; selection and evaluation of construction methods; CPM and PERT.
416. **Reinforced Concrete and Prestressed Concrete (5).** Lec. 5, Pr., CE 404.
Ultimate strength and working stress analysis and design of reinforced concrete beams, slabs, columns and footings. Prestressing systems. Analysis and design of pre-tensioned and post-tensioned beams for flexure and diagonal tension.
418. **Soil Mechanics (5).** Lec. 4, Lab. 3. Pr., ME 207, CE 314, junior standing.
Engineering properties of soils; soil surveys and sampling; stability; laboratory analysis and tests.
419. **Municipal Engineering II (3).** Lec. 2, Lab. 3. Pr., senior standing.
Engineering problems of municipal transportation, communications, water supply, sewerage, streets, schools, shopping, parking, and recreation facilities.
420. **Sanitary Engineering Laboratory (5).** Lec. 4, Lab. 3. Coreq., CE 405, junior standing.
Studies in the physical, chemical, and biological aspects of environmental engineering; laboratory testing procedures and experiments relating to the treatment of waters and wastes; interpretation of routine plant control analyses and indices of pollution.
421. **Water Resources Engineering (5).** Pr., CE 308, senior standing.
Environmental significance; hydrologic factors; water laws; water uses; nature, sources and abatement of pollution; quality control measures, planning.
423. **Similitude in Engineering (3).** Lec. 2, Lab. 3. Pr., senior standing or consent of instructor.
Principles of dimensional analysis and similitude. Aspects of engineering experimentation. Types and uses of models, analogies. Simple applications to engineering problems.
424. **Air Pollution (3).** Pr., senior standing and consent of the instructor.
The nature of polluting materials including gases, dusts, vapors and fumes and the relation of atmospheric conditions to their dispersal. Administrative standards and controls pertaining to air pollution.
425. **Soil Stabilization (3).** Lec. 3, Pr. CE 418, or equivalent.
Methods of stabilizing soft soil-consolidation, compaction with the use of lime, cement and other additives; construction operations, costs, and field control related to soil stabilization.
488. **Civil Engineering Design I (3).** Lec. 1, Lab. 6. Pr., senior standing.
The first course in a two-course sequence devoted to developing a solution to a significant civil engineering design problem. (Should be taken immediately prior to CE 489).

489. **Civil Engineering Design II (5).** Lec. 2, Lab. 9. Pr., CE 488 and senior standing. The second course in a two-course sequence devoted to developing a solution to a significant civil engineering system problem. (Should be taken during student's final quarter).
490. **Special Problems.** (credit 1-5). Pr., permission of instructor and department head approval. Individual student endeavor under staff supervision involving special problems of an advanced nature in civil engineering.
492. **Linear Optimization Methods (5).** Lec. 5. Pr., MH 264, junior standing. Simultaneous linear equations and inequalities, vector spaces, transformation of variables, algorithms for solution or optimization of a linear expression with linear constraints, introduction to error analysis, approximation by linear expressions, separable programming, introduction to game theory.
493. **Discrete Optimization Methods (5).** Lec. 5. Pr., CE 492. Optimization with discrete-valued variables or combination of discrete and continuous variables. Both deterministic and probabilistic situations to be handled by sequential optimization or networks in graph theory. Adaptations in discrete and continuous variable methods, such as finite differences or integer linear programming.

GRADUATE COURSES

602. **Advanced Soil Mechanics (5).** Lec. 4, Lab 3. Pr., CE 418, or equivalent. Study of stress-strain characteristics of soils, stress distribution in soil media, consolidation, shear strength, and bearing capacity with application to analysis and design of spread footings, rafts, and deep foundations; case studies.
603. **Quantitative Methods for the Planning Process (5).** Pr., graduate standing. Statistical and mathematical tools useful in modern planning analysis. Survey of various techniques to facilitate decisions in the planning process. Emphasis on the role and evaluation of modern quantitative techniques rather than technical competency. (This course is identical to URP 603).
604. **Seepage Through Porous Media (5).** Lec. 5. Pr., CE 602. Darcys Law, soil permeability coefficients, unconfined and confined flow in porous media; methods of solutions: analog methods, numerical techniques, and graphical techniques; soil filters, drainage, dewatering, well flow.
605. **Soil Stability Problems (5).** Lec. 5. Pr., CE 604. Retaining structures including cofferdams, bulkheads, and retaining walls; stability of natural and cut slopes, embankments; earth dam design; methods of field measurements; case studies.
606. **Soil Dynamics (5).** Lec. 5. Pr., CE 602, 633. Wave propagations in soils, lumped systems as applied to soil-structure systems, soil properties for dynamic loading conditions; earthquakes, oscillations, and blast loading conditions; analysis and design.
607. **Soil Mechanics Instrumentation (4).** Lec. 3, Lab. 1. Pr., CE 605. Methods of measuring pore water pressure, total stresses, and displacements of soils in the laboratory and field; case studies.
608. **Theoretical Soil Mechanics (5).** Lec. 5. Pr., CE 605, 606. A study of recent theoretical developments as they apply to soil mechanics. Use of digital and analog computers. Literature studies.
609. **Pavement Design (5).** Lec. 5. Pr., CE 425, 602. Utilization of soils for subgrades, bases, and pavements; composition and thickness design for parking, highway, and airport pavements; stress distribution of wheel loads in layered media; construction procedures; field control tests; cost analysis of pavements.
610. **Model Analysis of Structures (3).** Lec. 2, Lab 3. Pr., CE 423 or consent of instructor. Structural models. Direct and indirect model analysis of structures. Analogies.
611. **Transportation Planning (3).** Pr., CE 603. The transportation planning process; trip generation, forecasting and assignment techniques; goal formulation and analysis of plans. (This course is identical to URP611).
612. **Hydrodynamics (5).** Pr., MH 361; CE 308 or ME 341. Equations of motion for nonviscous liquids, force potentials, velocity potentials, conformal mapping, circulation, vortices, equations of motion for viscous liquids, boundary layers, drag, turbulence, and wave motion.
613. **Flow of Fluids in Pipes (5).** Pr., CE 308 or ME 341. Viscous and turbulent flow of liquids, effects of compressibility, pressure waves, secondary flows, control devices, measuring devices.
620. **Theory of Water and Waste Water Treatment.** Concepts of Chemistry and Biology applied to Water and Waste treatment processes.
621. **Unit Operations of Water and Waste Water Treatment (5).** The processes of Water and Waste-Water Treatment considered on a unit operations basis.
622. **Advanced Environmental Engineering Practice (5).** Lec. 3, Lab. 6. Pr., consent of instructor. Advanced laboratory problems and field exercises in the application of sanitary examination of water, milk, food, wastes, and air; stream pollution and industrial waste surveys.

623. **Industrial Waste Treatment (5). Pr., consent of instructor.**
Industrial waste problems, including the characteristics of individual industries, effects on streams, and methods of treatment and disposal; treatment and disposal of radioactive wastes.
624. **Water Resource Systems I (5). Pr., CE 493.**
Applications of systems methodology to the analysis of problems involving hydrology, surface and subsurface reservoirs, flood forecasting, flood routing and reservoir design and operation.
625. **Water Resource Systems II (5). Pr., CE 641.**
Techniques such as simulation, linear and dynamic programming and queuing theory applied to pipe networks, open channels, transients in closed conduits, and water supply and waste water treatment systems.
626. **Water Resources Systems III (5). Pr., CE 624, 625.**
Water quality forecasting and multipurpose river basin development. The current literature will be studied.
630. **Advanced Structural Analysis (5). Lec. 5.**
Response of structures and components to complex loading combinations and support conditions. Shear center, unsymmetrical bending, curved beams. Beams on elastic foundations. Torsion of non-circular sections. Column theory and buckling. Theories of failure. Inelastic theory of structures. Yield line theory of slabs.
631. **Special Topics in Structural Analysis and Design (5). Lec. 4, Lab. 3. Pr., CE 633 or consent of instructor.**
Analysis and design of plate and shell structures. Special problems in advanced structural analysis and design.
632. **Experimental Techniques in Structural Analysis (3). Lec. 2, Lab. 3.**
Basic theory, techniques and instrumentation for structural testing. Mechanical and electrical strain gages. Brittle lacquer, photogrid, and photoelastic methods. Instrumentation for structural testing.
633. **Applied Elasticity (5). Lec. 5.**
Fundamentals of theory of elasticity, and their application to structural problems. Energy formulations and variational principles.
634. **Advanced Theory of Structures (5). Lec. 5.**
Moment distribution of frames with multiple degrees of freedom. Minimum energy principle, conjugate structure, elastic center, and column analogy methods. Flexural members with varying moments of inertia. Arches and cables. Special topics.
635. **Numerical Techniques in Structural Analysis (5). Lec. 5. Pr., consent of instructor.**
Approximate methods of analysis for structural members of variable section; stiffness factors; stability vibrations; vibrations; elastic foundations, beam-columns.
636. **Dynamics of Structures (5). Lec. 5. Pr., consent of instructor.**
Vibration theory. Methods for computing the dynamic response of structural systems. Blast loads, earthquakes, and wind oscillations.
637. **Matrix Analysis of Structures (5). Lec. 5. Pr., consent of instructor.**
Displacement and force methods of matrix analysis of structures. Applications to determinate and indeterminate trusses, beams and frames. Yielding of supports, lack of fit and temperature effects. Special topics.
638. **Finite Element Methods in Structural Mechanics (5). Lec. 5. Pr., CE 637 (or consent of instructor).**
Principles of finite element analysis. Variational principles, displacement formulations. Plane stress, plane strain and axisymmetric analyses. Extensions to three-dimensional problems. Thermal stresses. Special applications.
640. **Classical Optimization Theory (3). Lec. 3. Pr., MH 405 (or concurrently); CE 492 or consent of instructor.**
Optimization with several continuous variables. LaGrange functions, Kuhn-Tucker conditions, gradient methods, continuous and discrete optimum principles.
641. **Discrete and Stochastic Optimization Theory (3). Lec. 3. Pr., CE 493.**
Sequential optimization with both discrete and continuous variables, functions of random variables, derived distributions, Markov processes, optimization and sensitivity analysis for network flow and network sequencing.
642. **Algorithms for Linear Optimization (3). Lec. 3. Pr., MH 405 (or concurrently); CE 492 or equivalent.**
Alternative methods in linear programming, analysis of dual problem, sensitivity and parametric linear programming (post-optimality problems), partitioning large problems, bounding and cutting plane techniques, imposing and eliminating constraints, separable programming, algorithms for types of linear programming problems.
643. **Stochastic Models (3). Lec. 3. Pr., CE 641.**
Selection of probability distribution functions, mathematical models based on random variables, queuing theory, logistics, risk and penalty functions, stochastic variables in deterministic models, criteria for selection or acceptability of models.
644. **Non-Linear Optimization and Approximation (3). Lec. 3. Pr., CE 642.**
Adaptations of linear programming, integer programming and searching, convex sets, polygon approximations, quadratic programming, geometric programming, bounding functions, replacing discrete or continuous variables, approximating by sequence of functions and by series of functions, convergence of iterative procedures, nearness of approximation.

645. **Prediction and Simulation Methods (3).** Lec. 3. Pr., CE 641.
Curve fitting, correlation, multiple regression and factor analysis, expected value problems, minimal variance, simulation design, sampling and design of experiments, random walks.
647. **Theory of Strategies (3).** Lec. 3. Pr., CE 492 and CE 493, or equivalent.
Classical theory of games, probabilistic bounding functions, competitive decisions, unbounded and conservative strategies, modeling of games, strategies for selected games, historic effect of strategies.
660. **Construction Applications of Operations Research I (3).** Pr., CE 492 or equivalent and MH 460 or equivalent.
The application of *Operations Research* methods to construction engineering; linear programming; deterministic inventory models; replacement, maintenance, and reliability models. Sensitivity analysis.
661. **Construction Engineering Functions (3).** Pr., Graduate Standing.
Organization of construction engineering functions emphasizing underlying economic principles and phenomena associated with construction engineering projects. Financial analysis, cost concepts and elements in pricing, volume-cost-profit relationships, decision-making models, and legal environment.
662. **Construction Applications of Operations Research II (3).** Pr., CE 660.
The application of *Operations Research* methods to construction engineering; dynamic programming; probabilistic inventory models; waiting-lines; simulation.
663. **Construction Engineering Methods (3).** Pr., CE 660, 661.
The application of engineering principles to the selection and evaluation of construction methods.
664. **Construction Systems Planning and Control (3).** Pr., CE 662, 663.
The construction process defined as an engineering system. Applicable methods of describing, analyzing, controlling, and manipulating collections of interrelated construction operations treated as a system; techniques of design of construction sub-systems and appropriate evaluation methods.
665. **Construction Engineering Analysis (3).** Pr., CE 662, 663.
Quantitative analysis of *material handling systems* with emphasis on the measurement and forecasting of productivity in construction engineering.
690. Seminar. Credit to be arranged. May be taken more than one quarter.
691. Directed Reading in Civil Engineering. Credit to be arranged. May be taken more than one quarter.
699. Thesis. Credit to be arranged. May be taken more than one quarter.

Consumer Affairs (CA)

Professors Galbraith, Head, and Compton
Associate Professors Douty, Morton, and Spencer
Assistant Professors Lorendo and Weaver
Instructors Elam and Potter

105. **Fundamentals of Clothing (5).** Lec. 2, Lab. 8. Pr., CA 115.
Basic theories and principles of garment selection and structure, including their application in construction of apparel for personal use.
113. **Housing for Man (3).**
Housing, equipment and furnishings in terms of the total environment with reference to physical, biological, economic, cultural, personal, and social conditions which affect the family.
115. **Clothing and Man (3).**
Cultural, aesthetic, functional, and technological factors as they interact to determine the meaning and use of clothing and textiles for the individual and society.
116. **Art for Everyday Living I (3).** Lec. 2, Lab. 2.
A working knowledge of basic concepts in the organization and evaluation of design with emphasis placed upon the contribution of design and color as enrichment of the environment for individual and family living.
205. **Clothing For the Family (3).**
Clothing consumption problems with emphasis on the needs of family members at all stages of the life cycle.
206. **Garment Structures—Theory and Application (3).** Lec. 1, Lab. 5. Pr., CA 105.
Problems involved in shaping fabric to the human form; processes and sequences in determining garment function and quality.
216. **Art for Everyday Living II (3-5).** (3) Lec. 2, Lab. 2. (5) Lec. 2, Lab. 6. Pr., CA 116 or equivalent.
A continuation of the individual's artistic environment with emphasis on the application of principles of design and color to specific problems of everyday life.
225. **Textiles (5).** Lec. 4, Lab. 2. Pr., CH 103.
Fibers, yarns, fabrics and finishes in their relationship to apparel and household fabrics.

226. **Fashion Sketching (5). Lec. 3, Lab. 4.**
Provides for the fashion merchandising or clothing design major simple methods of communicating apparel designs through quick sketches to portray fashion in silhouettes, texture and color.
233. **Home Equipment (5). Lec. 3, Lab. 4. Fall, Winter, Spring.**
Home equipment, with emphasis on selection, use and care.
303. **The House (5). Lec. 2, Lab. 6. Fall, Winter, Spring.**
Planned to give the student an appreciation of basic plans, both period and modern, from the standpoint of utility, beauty and economy.
305. **Tailoring (3). Lab. 9. Winter, Summer. Pr., CA 105 or equivalent, junior standing.**
Selection of fabric and tailoring of a suit or coat.
306. **Personal Appearance and Social Interaction (3). All quarters.**
Good grooming, its contributing factors and their influence on social and business relations.
310. **Mass Communication in Family and Consumer Services (3). Lec. 1, Lab. 2. 2 2-hr. labs. Pr., SP 202.**
Responsibilities and techniques of presenting professional information and materials to the public through radio, television and live performances.
313. **Home Furnishing (5). Fall, Spring, Summer. Pr., Elementary Art or equivalent.**
Home furnishings both from an aesthetic and practical standpoint. This includes the recognition of period furniture and its adaptability to the home of today.
316. **Fashion Analysis (5). Pr., CA 205, CA 225.**
Study and analysis of the dynamic nature of fashion and the interacting forces which shape fashion trends in apparel.
325. **Fundamentals of Retailing (5). Winter. Pr., EC 200, junior standing.**
The practices and policies of retail stores.
333. **Lighting Equipment (3). Lec. 2, Lab. 2. Winter.**
Principles underlying the uses of color and lighting equipment in the home.
335. **Retail Training (8). Fall. Pr., CA 325.**
Three months practical experience with pay in large department store. Students are given formal instruction and supervision. Scheduled only by pre-arrangement.
343. **Interior Home Problems (5). Fall, Spring.**
Harmonious combinations of present day furnishings, materials, and finishes.
345. **Creative Crafts (1-2-3). Lab. 9. Each quarter.**
Design and execution of creative crafts; viz., metal work, leatherwork, ceramics, weaving, fabric decoration.
355. **Consumer Textiles (3). Lec. 3. Fall, Winter, Spring.**
Textile fabrics, finishes, and trade practices with special emphasis on consumer problems.
375. **Creative Ceramics (1-3). Lab. 9. Winter quarter.**
Working with various clays, building processes, ceramic glazes, and ceramic design.
385. **Creative Weaving (2-3). Each quarter.**
Weaving design and experience in selecting yarns, setting up a loom and weaving one's own fabric.
395. **Clothing Design (5). Lec. 2, Lab. 6. Fall, Spring. Pr., CA 105, 116, 205, or equivalent.**
Color, line, form, and texture as a basis for designing apparel, with consideration of technological developments, production problems, and fashion movements which influence design decisions.
405. **Costume Draping (5). Lec. 2, Lab. 9. Spring. Pr., junior standing, CA 395, and two quarters of clothing construction.**
Creative experience in development and execution of apparel designs through draping varied fabrics on individualized body structures. Exploration and application of theories and philosophies and practices of contemporary designers.
413. **Contemporary Housing and Equipment—Travel Course (5 hours—28 days).**
Course may be repeated for additional credit, not to exceed 10 credit hours (not more than 5 hours graduate credit). Pr., 10 cr. hrs. in equipment, housing, or home management; junior standing; consent of instructor.
Housing and household equipment in North European countries. Housing: historic and contemporary housing, techniques for meeting population growth, the housing of special groups, community and city planning. Equipment manufacture, distribution, testing, standardization, merchandising, power merchandising and home use. Lectures will be presented at prearranged points. A paper is required on a selected phase of the course.
415. **History of Textiles (5). Lec. 5. Pr., elementary art and junior standing.**
The development of the textile industry and of fabric design from the earliest times to the present day.
416. **Apparel Quality Evaluation (5).**
Methods for evaluating quality variations of soft goods as affected by materials, manufacturing processes, markets and resources.

423. **Equipment and Housing Technology (5).** Lec. 2, Lab. 6. Pr., junior standing, MH 159 or equivalent, PS 204, PS 205, or equivalent, CH 104.
Application of basic physical principles and the use of testing instruments with electricity and fuel gas equipment.
425. **History of Costume (5).** Lec. 5. Pr., elementary art and junior standing.
Outstanding historic modes in dress for men and women from early times to the present day.
431. **Man-Environment Relations (2).** Pr., Home Economics core courses.
The unifying principles and ideals, which are concerned with man's immediate physical environment (housing, clothing, food) and with his nature as a social being. Analysis and synthesis of principles explored in Home Economics core courses CA 113, 115, 116, NF 119, FCD 257, and FCD 323.
433. **Food Equipment (5).** Lec. 3, Lab. 4. Winter, Summer. Pr., junior standing, PS 204, or PS 205, CA 233.
Principles underlying the operation and use of food equipment.
435. **Textile Testing (5).** Lec. 2, Lab. 6. Winter.
Standard testing procedures and equipment used in determining the physical and chemical characteristics of fibers, yarns, and fabrics, and of the statistical methods employed in data evaluation.
445. **Fashion Merchandising (5).** Lec. 5. Pr., CA 325, or consent of instructor.
Principles and practices of merchandising in relation to problems of retailing fashion goods. Consideration of the consumer as a major factor in planning merchandise assortments and presentation.
451. **Audio-Visual Education In Home Economics (3).** Pr., junior standing.
Organization and analysis of illustrative and demonstration materials in the major fields of Home Economics.
453. **The Consumer and The Market (5).** Fall, Spring. Pr., junior standing and EC 200.
Consumer problems connected with marketing; type of retail outlets, credit advertising, standardization, labeling, and price policies.
455. **Flat Pattern Designing (5).** Pr., junior standing. Lec. 2, Lab. 6. Pr., 8 quarter hours in clothing construction.
Commercial methods of pattern making. Developing a foundation pattern from which to design and cut garments. Attention is given to variations from the norm of human body measurements and to the need for further research in designing for various age groups.
456. **Comparative Methods of Apparel Production (5).** Lec. 2, Lab. 6. Pr., 8 quarter hours of clothing construction and junior standing.
End-use qualities of apparel in relation to options in methods of production and organizational procedures. Implications for consumer decisions and industrial quality control and pricing.
465. **Ceramics—Advanced Construction and Glazing (2-3).** Lab. 9. Fall, Winter, Spring. Pr., CA 375.
Advanced ceramic techniques emphasizing proficiency in wheel throwing, construction, and glazing. Independent study under tutorial guidance.
466. **Ceramics—Wheel Throwing (2-3).** Lab. 9. Fall, Winter, Spring. Pr., CA 375.
Advanced construction and glaze techniques emphasizing an individual approach, study of various glazes and glaze properties, mixing and firing of glazes formed from basic chemicals. Independent study under tutorial guidance.
473. **Contemporary Home Furnishings (3).** Lec. 1, Lab. 4. Pr., CA 313 or 343 or its equivalent.
Factors contributing to developments in the current home furnishings industry in design, manufacturing cost, and terminology. A project report is required.
475. **Creative Textile Design (2-3).** Lab. 9. Pr., CA 116 or AT 181.
An introduction to various techniques used in the creative decoration of fabric, with experience in the execution of these techniques for both fashion and interior textiles.
476. **Textile Printing (3).** Pr., CA 475.
Various screen printing techniques, such as cut film, block out, paper stencil, photographic, etc., applicable to commercial production.
483. **Laundry Equipment and Care of Textile Articles (5).** Lec. 2, Lab. 6. Pr., junior standing, CH 104, PS 204 or 205, CA 225 or equivalent.
The physical principles involved in the laundering processes will be applied to include selection, care and proper use of laundering equipment. The reaction of the textile articles to laundry equipment will be studied. The course is team taught by a professor in household equipment and a professor in clothing and textiles.
486. **Rug Weaving (2-3).** Lab. 9. Pr., CA 385.
The study and execution of various rug weaving techniques, their history, development, use in hand weaving and their application to commercial production.
487. **Advanced Pattern Weaving (2-3).** Lab. 9. Pr., CA 385.
The study of advanced pattern weaving used in hand weaving and applicable to commercial production.

490. Independent or Field Study (3-8).

An individual problems course involving directed readings and/or laboratory or field experiences under the direction of a faculty member on some problem of mutual interest. Field experiences may include work with families, business or industry.

493. The House Utility Core (3). Lec. 2, Lab. 3. Pr., junior standing, 5 hours in equipment.

A course that presents home wiring, heating and cooling, the use of water in the home, the physical arrangement, and space allocated to their use. To include kitchen, laundry, and bathroom planning.

GRADUATE COURSES**601. Seminar (5).**

A. Clothing; B. Textiles; C. Equipment; D. Housing. May be taken for a maximum of 10 hours.

603. Home Economics in Higher Education (5).

The effects of scientific, technological and social developments on the family and the Home Economics profession as they have implications for higher education in this discipline. Emphasis: current trends in subject matter areas, scope and program development, administration, and instructional resources.

605. Methods of Research in Home Economics (3).

Research and investigation methods applicable to the various areas of Home Economics. Required of all graduate students in Home Economics.

609. Special Problems a) Clothing, b) Textiles, c) Equipment, d) Housing (2-5). Pr., consent of instructor. May be taken in more than one area for a total of 10 hours.**632. Research Techniques in Equipment and Housing (5). Lec. 3, Lab. 6. Pr., CA 423, BY 401 (statistics) or equivalent.**

A lecture and laboratory course in which problem solving techniques and methods are developed.

633. Family Housing (5). Lec. 5. Pr., EC 200, CA 303, CA 323.

The history and development of American housing; economical, legal and social aspects; present trends.

638. Advanced Housing (3). Lecture lab. 8-12 for 12 days.

A two-week course offered in the summer quarter. A leader of some renown in the field of housing will be secured to lecture and direct laboratory work in space, form, livability, and other physical aspects of housing. Approved for graduate credit for Master of Science programs.

652. Clothing and Textiles Literature (5).

Written material in the field of Clothing and Textiles with special emphasis on current periodicals, pamphlets, and reports of recent research. Required of all candidates for the master's degree in Clothing and Textiles.

653. Economics of Clothing Consumption (5). Pr., EC 200, CA 205.

A critical examination of the literature on Clothing and Textiles economics, modern trends in manufacture and distribution and labor laws and their influence on clothing.

655. Problems in Home Decoration (5).

The undergraduate course, CA 313, is used as a basis for advanced work along the same lines. Problems in valuing choice of materials and arrangements of exteriors as well as interiors of the home are made the topic of minor research.

657. Detergency and Cotton Textiles (5).

The chemical relation of detergent, water, bleach, and mechanical action to cotton fibers (cellulose).

658. Chemical and Physical Analysis of Textiles (5).

The theory of A.S.T.M., A.A.T.C.C., and other standardized procedures.

659. Modern Fibers and Fabrics (5).

Textiles as they actually are and an evaluation of the individual properties and characteristics peculiar to all fibers.

667. Clothing and Behavior (5). Pr., basic courses in Sociology, Psychology, and consent of the instructor.

Clothing as a factor in the physical, social and psychological environment of man, his response to and use of clothing as an aspect of individual behavior and culture.

669. Personality Projection Through Clothing (3). Pr., CA 667; FCD 670 or PG 433.

Psychological processes and theories of personality in relation to clothing-oriented behavior, as supported by research. Emphasis is placed upon the interrelationships among the self, the body, and clothing at each developmental stage of the life cycle.

699. Research and Thesis. Credit to be arranged.

Required of all students under the Thesis Option in any field.

Counselor Education (CED)

Professor Grant

Associate Professors Meadows, Head, and Allen

Assistant Professors Donnan, Michels, Spruell, Werner

Instructor Miller

Prerequisites and corequisites in the Department of Counselor Education are experience in teaching or other appropriate fields and employment or professional objectives leading to employment in public school counseling, rehabilitation counseling, counselor education and college student personnel work. CED 621, or equivalent, is a prerequisite or corequisite to advanced study.

For Advanced Undergraduates and Graduates**421. Guidance in the Public Schools (5). Pr., senior standing.**

Emphasizes understanding guidance relationships in the classroom. Not open to graduate students majoring in guidance and counseling.

Primarily for Graduate Students**621. Principles of Guidance and Student Personnel Work (5).**

Enables students to develop a conceptual framework for viewing the inter-relationship of guidance and counseling in terms of (1) personal and social factors and (2) their place in a comprehensive program of student personnel work. Prerequisite to all further study in guidance and student personnel work.

622. Introduction to Rehabilitation Counseling (5). Pr., CED 628 and Permission of Instructor.

Counseling process in the rehabilitation setting. Focusing also on the historical development, duties, legal background, ethics and the setting.

623. Medical and Adjustment Aspects of Disability I (5). Pr., Permission of Instructor.

Orientation to medical and adjustment aspects of the disabled individual. Understanding and using medical and paramedical personnel effectively in the rehabilitation process.

624. Medical and Adjustment Aspects of Disability II (5). Pr., CED 623.

A continuation of CED 623. Focuses on rehabilitation with the chronically disabled.

625. Vocational Appraisal (5). Pr., PG 415 or equivalent and permission of instructor.

Appraisal of interest, aptitude, and personality tests used in the process of counseling with individuals confronted with vocational decisions. Laboratory practice in test administration, scoring, interpretation, and reporting.

626. Case Management in Rehabilitation Counseling (5). Pr., CED 622 or permission of instructor.

A critical analysis of representative rehabilitation cases, and case records. Attention is focused on process, diagnosis, and provision of services.

627. Problems in Guidance (5). Pr., permission of the instructor.

Develops competency in the application of counseling theory and research findings, with special emphasis on educational problems.

628. Counseling Theory and Practice I (5). Pr. or coreq., CED 621, CED 638; pr., PG 415, 433.

Presents alternative theoretical strategies of counseling; integrates the concepts of individual analysis and the collection and dissemination of educational and occupational information with those of counseling; prepares the student for further study of the theoretical and practical aspects of counseling.

629. Counseling Theory and Practice II (5). Pr., CED 628.

A continuation of CED 628.

630. Group Dynamics in Counseling (5). Pr., CED 621.

Studies in contemporary theories and analysis of concepts, models and pertinent research in group dynamics as it pertains to counseling.

631. Group Procedures in Counseling (5). Pr., CED 621.

The history, philosophy, and principles of group counseling and guidance. Includes pertinent research, and the dynamics of group interaction in counseling settings.

632. Organization and Administration of Guidance Programs (5). Pr. or coreq., CED 621.

For administrative and guidance personnel. Primary purpose is to identify the major functions of education, perceive guidance in this perspective and then to study the organization, administration, and evaluation of guidance programs in their educational setting.

633. Analysis of the Individual (5). Pr. or coreq.; CED 621; pr., PG 415.

Assists teachers and other guidance personnel in acquiring knowledge, understanding and skill necessary to obtain records and appraise information about the pupil as an individual and as a member of a group.

634. **Counseling in the Elementary School (5). Pr., CED 621 or permission of instructor.**
Counseling and related activities are considered in the scope of pupil personnel activities as a developmental process in the elementary school.
635. **Agency Resources and Placement Services in Rehabilitation Counseling (5). Pr., CED 622 or permission of instructor.**
Development and utilization of agency resources of value to the rehabilitation counselor. Emphasis is given to placement services and opportunities in working with the disabled.
637. **Theories of Vocational Development (5). Pr., CED 621 or permission of instructor.**
Designed to analyze theories of vocational development with special emphasis on the integration and practical application of the theories in counseling.
638. **Information Services in Guidance and Counseling (5). Pr., or coreq., CED 621; pr., PG 415, 433.**
Helps school counselors develop an understanding of the individual appraisal service and its relationship to counseling; the educational and occupational information service and its relationship to counseling.
646. **Studies in Education (1-3). Pr., One quarter of graduate study and departmental approval.**
A special problem in administration, supervision, guidance, or higher education using research techniques. (Credit in ED 651 prior to 1960 excludes credit for this course.)
647. **Supervisory Procedures in Rehabilitation Counseling (5). Pr., AED 670 and permission of instructor.**
Procedures and practices specific to the supervision of rehabilitation counselor and counselor-related services in rehabilitation agencies.
648. **Planning and Program Development in Rehabilitation Counseling (5). permission of instructor.**
Trends in program development, planning, and evaluation of research and theoretical writings in the area. A comprehensive study of research and demonstration projects in rehabilitation counseling.
650. **Seminar in Area of Specialization (1-5). Pr., Permission of instructor.**
Provides for advanced graduate students and professors to pursue cooperatively selected concepts and theoretical formulations.
651. **Internship in Area of Specialization (1-15). Pr., Permission of the instructor; may be repeated for a total of not more than 15 credits.**
Provides advanced graduate students with full-time, supervised, on-the-job experiences in a school, college, or other appropriate setting. These experiences will be accompanied by regularly scheduled, on-campus discussion periods, designed to provide positive evaluation and analysis of the field experience.
653. **Counseling Programs in Higher Education (5). Pr., CED 621, or permission of instructor.**
Emphasizes the integration of counseling functions within the total student personnel program in higher education, legal and ethical aspects of counseling and student personnel work, and communication problems between groups within the institution and community.
654. **College Student Development; Implications For Counseling and Student Personnel Work (5). Pr., IED 663 or permission of instructor.**
Emphasizes the developmental characteristics of college students, student culture and environment, student movements, research concerning the diversity of college student populations and implications for counseling and student personnel programs.
656. **Research and Evaluation in Counseling (5). Pr., Permission of instructor.**
Measurement, appraisal, and evaluation of a broad range of objectives in counseling and guidance. Emphasis on criteria, techniques and research procedures necessary to evaluate counselor programs.
659. **Practicum in Area of Specialization. Credit to be arranged. Pr., Permission of major professor. No more than 10 hours of practicum credit may be earned at the Master's level.**
The practicum provides advanced graduate students with supervised experiences with emphasis on the application of concepts, principles, and skills acquired in previous course work.
699. **Research and Thesis. Credit to be arranged. May be taken more than one quarter.**
798. **Research and Thesis (5).**
799. **Research and Dissertation. Credit to be arranged.**

Dairy Science (DH)

Professors Autrey, Head, Cannon, and Hawkins

Associate Professor Rollins

Assistant Professor McCaskey

101. **Man's Food (3). Lec. 3. Fall, Winter, Spring.**
Analysis of the world food supply; problems of food availability and distribution; methods of alleviating food shortages; role of the food processor.

200. **Fundamentals of Dairying (5).** Lec. 4, Lab. 3. Fall, Spring. Pr., CH 103.
General survey of dairying. Feeding, care and management of dairy cattle. Dairy farm equipment and records. Composition and properties of milk. Handling, testing and processing of milk.
314. **Dairy Cattle Judging (3).** Lec. 2, Lab. 3.
Comprehensive study of the ideal body type and conformation pertaining to the major dairy cattle breeds and to the functional anatomy of the cow. Practical work in comparative dairy cattle judging; conduct of judging contests, oral and written reasons for placings; fitting and exhibiting dairy cattle at fairs and shows.
317. **Dairy Cattle Feeding and Management (5).** Lec. 4, Lab. 3. Pr., DH 200 and AH 204.
Evaluation of various feeds for growth and milk production; nutritional requirements of dairy animals; application of the principles of nutrition to dairy cattle feeding; calculating rations. Some time devoted to dairy cattle breeding plans, procedures of herd record keeping and management.
401. **Physiology of Lactation (5).** Pr., senior or graduate standing.
Anatomy and physiology of milk secretion; milk precursors; factors affecting composition of milk.
402. **Artificial Insemination (3).** Lec. 1, Lab. 6. Winter. Pr., DH 200 and junior or senior standing.
The Artificial Insemination Association; anatomy and physiology of bovine reproduction; practice in collecting, processing and using semen in breeding cows; and study of factors affecting breeding efficiency.
403. **Dairy Farm Practices (5).** Lec. 3, Lab. 6. Spring. Pr., DH 317 and junior standing.
Practical study of feed production, storage, and feeding problems; analysis of herd records and pedigrees; study of herd management procedures. In this course emphasis is on situations and records existing on dairy farms.
406. **Dairy Cattle Feeding and Management (3).** Pr., AH 204 and DH 200 or DH 317, and graduate standing.
Bases of modern feeding practices; emphasis on reasons for feeding high quality roughage and high energy feeds. Limited study of dairy herd management problems and practices; milk production, testing and recording; appraisal of artificial breeding as a tool in cattle improvement.
407. **Dairy Chemistry (5).** Lec. 3, Lab. 4. Pr., CH 203 or CH 208 and junior standing.
Chemistry of milk constituents; interaction of constituents with one another under various conditions; analysis of milk, milk constituents, and milk products.
- 408-9. **Processing Dairy Products (5-5).** Lec. 3, Lab. 6. Winter, Spring. Pr., junior standing.
Application of processing operations to the processing of dairy products; special processing techniques; quality control of products.
410. **Food Microbiology (5).** Lec. 3, Lab. 4. Spring. Pr., VM 200.
The relationship of habitat to the occurrence of microorganisms on food; environment affecting the growth of various microorganisms in foods; microbiological action in food spoilage and food manufacture; physical, chemical and biological destruction of microorganisms in foods; microbiological examination of foodstuffs; and public health and sanitation bacteriology.
411. **Food Plant Sanitation (3).** Lec. 2, Lab. 2. Winter. Pr., junior standing.
Sanitary regulations of food plants. Principles and procedures of cleaning and sanitizing food handling equipment.
412. **Food Service Seminar (1).** Lec. 1. Pr., senior standing.
Lectures, discussions, literature reviews by staff, students and guest speakers.

GRADUATE COURSES

602. **Technical Control of Dairy Products (5).** Pr., consent of instructor.
Advanced methods of analyses of dairy products and the relation between composition and processing methods.
604. **Market Milk (5).** Pr., DH 410.
Scientific investigations of current problems and their application to the commercial processing and handling of market milk. Special assigned problems.
605. **Ice Cream Making (5).** Pr., DM 410.
Scientific investigations of current problems and their application to the commercial manufacture and handling of ice cream. Special assigned problems.
607. **Advanced Dairy Cattle Breeding (5).** Pr., consent of instructor.
The anatomy and physiology of reproduction in dairy cattle; artificial insemination problems.
608. **Dairy Cattle Nutrition (5).** Pr., consent of instructor.
Critical review of literature on certain dairy cattle nutrition subjects; planning and executing one or more experimental nutrition problems.
609. **Experimental Methods in Dairy Research (5).** Pr., BY 401 or equivalent.
Study of technics in designing dairy research projects and in analyzing results.
610. **Special Problems in Dairy Science (3-5).** Credit to be arranged.
611. **Seminar (1).** May be taken for more than one quarter.
699. **Research and Thesis.** Credit to be arranged.

Economics and Geography (EC) (GY)

Professors Steele, *Acting Head*, Anson, Chastain, Richardson, Ritland, Kern,
Kinsey, Klontz

Associate Professors Boston and Street

Assistant Professors Anders, Bagwell, Bushey, Dorman, Howard,

Icenogle, Rungeling, Stanaland, and Whitten

Instructors Alban, N. W. Allen, Burks, Carlson, Jackson, Kent, McMath,
Sherling, and Woodfin

Economics (EC)

200. **Economics I (5). Pr., sophomore standing.**
Economic principles with emphasis upon the macro-economic aspects of the national economy.
202. **Economics II (5). Pr., EC 200.**
A continuation of economic principles with emphasis upon micro-economic aspects of the economy.
206. **Socio-Economic Foundations of Contemporary America (3). General elective.**
The social and economic developments which lead to and help toward an understanding of present day American society.
350. **Labor Economics (5). Pr., EC 202, junior standing.**
A theoretical and institutional examination of the labor market, including wage theories, unionism, the economics of collective bargaining, and problems of insecurity.
360. **Money and Banking (5). Pr., EC 202 or AS 202, junior standing.**
Money, credit and banking including consideration of monetary systems, foreign exchange and commercial banking with relation to the Federal Reserve System.
402. **American Industries (5). Pr., EC 200, and junior standing.**
Selected industries, emphasizing economic factors affecting growth, organization and operation.
444. **Labor Legislation (5). Pr., EC 350, junior standing.**
Analysis of background, content, and significance of industrial relations, wage and hour, and selected social security laws.
445. **Industrial Relations. Pr., EC 200 and junior standing.**
Analysis of legislation, collective bargaining, union-management cooperation, and economic conditions bearing upon employer-employee relations.
446. **Business Cycles (5). Pr., EC 202 and junior standing.**
The causation of economic cycles, their measurement and proposed means of control.
451. **Intermediate Microeconomics (5). Pr., EC 202, junior standing.**
The theory of pricing under varying market conditions and distribution of income among the factors of production.
452. **Comparative Economic Systems (5). Pr., EC 202, junior standing.**
An analysis of the rival economic doctrines of Capitalism, Socialism, and Communism.
453. **Economics of Growth and Development (5). Pr., EC 202 and junior standing.**
Concepts, principles and problems of economic growth and development with consideration of appropriate policies for both underdeveloped and advanced economies.
454. **History of Economic Thought (5). Pr., EC 202, junior standing.**
The development of economic ideas, principles, and systems of analysis from early times to the present.
456. **Intermediate Macro-economics (5). Pr., EC 202 and junior standing.**
The measurement of national output, with income and employment theory, general equilibrium theory, and theories of interest, investment, and consumption.
457. **Economic History of Europe (5). Pr., EC 200 and junior standing.**
Economic contributions of the medieval period; mercantilism; laissez-faire; developments in agriculture, industry, transportation, trade, and banking.
458. **Economic History of the United States (5). Pr., junior standing.**
Development of the economic institutions, growth of industries, regional specialization, and relation of government to business enterprise from the Colonial period to the present.
459. **Economic Development of the South (5). Pr., junior standing.**
The historical approach to the development of industry, transportation, banking, etc., in the South. Emphasis is given to Alabama.
460. **Introduction to Econometrics (5). Pr., MH 161 or equivalent, AS 202 or EC 202 or equivalent, and EC 274 or equivalent, and junior standing.**
Formulation of Elementary Economic models using Economic Theory and Mathematics with certain basic assumptions or axioms. Mathematical tools used in Economic Analysis.
462. **Monetary Theory and Policy (5). Pr., junior standing and EC 360.**
Intermediate monetary theory and policy. Attention given to empirical studies. Substantial readings from original sources required.

465. **Public Finance (5).** Pr., EC 202, junior standing.
The problems faced by governmental units in raising and spending funds efficiently are discussed from the historical, institutional, and economic points of view. The course attempts to relate fiscal policy to monetary policy as government seeks to promote stability and growth.
471. **International Economics, EC 451 and junior standing, or permission of instructor.**
An examination of the pure theory and monetary aspects of international trade.
485. **Mathematical Economics (5).** MH 161, EC 451, and EC 456.
An introduction to mathematical methods in Economics. Fundamental propositions of micro and macro economic theory are derived mathematically.

GRADUATE COURSES

600. **The National Income and Capital Accumulation (5).** Pr., EC 202 and graduate standing or consent of instructor.
Computation of the national income, the uses of income data, interest rates, saving and investment, the monetary and credit system.
601. **Value and Distribution (5).** Pr., EC 451 and graduate standing or consent of instructor.
Positive content and limitations of modern theories of value, wages, rents, and profits.
607. **Regional and Urban Economics (3).** Graduate standing and consent of instructor.
The economic forces involved in planning a dynamic urban region; the principles of and applications for regional economic models; the role of quantitative models of urban development in metropolitan policy-making. (Cross listed as URP 607.)
622. **Theory of Wages and Labor Mobility (5).** Pr., EC 350 and EC 451 or permission of instructor.
Includes advanced study of various theories of wage determination and of theories and empirical studies of labor supply and mobility.
650. **Economic Seminar (1-10).** Pr., graduate standing or consent of instructor.
For those students engaged in intensive study and analysis of economic problems.
654. **Advanced History of Economic Thought (5).** Pr., EC 454 or consent of instructor.
The development of economic thought with emphasis upon Classical and Neo-Classical authors and their critics. The contributions of each writer are examined in the economic context from which they emerged and their influence on economic thought and national policy considered.
662. **Seminar in Money and Banking (5).** Pr., EC 360 and consent of instructor.
Goals, procedures, and achievements in attaining monetary objectives at home and abroad. Special emphasis is given to published research results.
665. **Seminar in Public Finance (5).** Pr., EC 360, EC 465, and graduate standing or consent of instructor.
Theory and principles of public finance at an advanced level with special emphasis on fiscal policy.
671. **International Economics and Finance (5).** Pr., EC 471.
Advanced foreign trade theory and balance of payments analysis, exchange rates, capital movements, financial institutions. Current problems in international finance.
699. **Research and Thesis.** Credit to be arranged.

Quantitative Methods (EC)

244. **Graphic Methods in Business (3).**
Presentation and analysis of business data by means of graphs and charts including line, bar, area, and break-even types of charts. Graphic solutions in linear programming.
274. **Business and Economics Statistics I (5).** Pr., MH 161 or equivalent and EC 200 or AS 202.
Frequency distribution and time series analysis; index numbers; probability; binomial and normal distributions; introduction to statistical inference.
374. **Quality Control (3).** Pr., EC 274.
Methods of assuring quality through commodity and process control. Economic acceptance plans; control charts, use of correlation and other statistical methods in quality control.
474. **Business and Economic Statistics II (5).** Pr., junior standing and EC 274 or equivalent.
Probability distributions including the Poisson and "t" distribution; advanced time series analysis; chi square; multiple and partial correlation; statistical decision theory.
475. **Quantitative Methods of Management (5).** Pr., junior standing and EC 274.
Quantitative methods in management and their application in production, marketing, and finance.

GRADUATE COURSES

608. **Business Research (5).** Pr., EC 474, and graduate standing or consent of instructor.
The theory and practice of research through the mail survey, the personal interview, study of documents and observation. The analysis and presentation of research findings will be stressed.

660. **Econometrics (5).** Pr., EC 451, EC 474, EC 446 or EC 465, AS 460.
Application of mathematics and statistical methods to the problems of economic analysis. Econometric models of the economy as a whole and of individual sectors will be considered.
674. **Business and Economic Statistics III (5).** Pr., EC 474, or equivalent.
Design of experiments; analysis of variance and covariance; fitting of Gompertz and other growth curves; selected nonparametric statistical methods.
675. **Managerial Statistics (5).** Pr., EC 474 or EC 475.
Application of classical and Bayesian statistical decision theory in the solution of management problems.
699. **Research and Thesis.** Credit to be arranged.

Geography (GY)

102. **Principles of Geography (5).** Not open to juniors or seniors.
Man and his work in relation to the Earth as a planet, location, climate, land forms, water bodies, minerals, soils, biota.
201. **Weather and Climate (5).** Pr., sophomore standing.
Weather and climate, their causes and controls. Characteristics and distribution of world climates with their economic and social effects.
203. **Economic Geography (5).** Pr., GY 102 or sophomore standing. Not open to juniors or seniors.
Distribution and environmental relations of man's principal economic activities.
301. **Geo-Political Basis of World Powers (3).** General elective. Pr., junior standing.
The interaction between the natural-physical environment and the international activities of world powers. Emphasis is placed upon the changing geographic and economic patterns in world affairs.
303. **Geography of the Soviet Union (3).** General elective. Pr., junior standing.
The physical and human geography of the U.S.S.R. and its role in international affairs.
304. **Geography of South America (5).** Pr., junior standing.
A regional survey of economic and social developments, resources and products.
305. **Geography of North America (5).** Pr., junior standing.
Human-use regions, resources, social and economic developments will be studied.
306. **Geography of Europe (5).** Pr., junior standing.
The influences of climate, surface features, and natural resources on the distribution of peoples, their industries and routes of trade. Consideration will be given to each country within its regional setting and to the relationship of Europe to the remainder of the world.
307. **Geography of Asia (5).** Pr., junior standing.
Climate, topography, and natural resources and their influence upon the distribution of peoples, their industries and commerce.
308. **Geography of Africa (5).** Pr., junior standing.
The principal regions of Africa with particular emphasis on the areas and countries of greater economic and international importance.
400. **Development of Geographic Thought (3).** Pr., junior standing and GY 102 or permission of instructor.
The development of modern geographic thinking with especial attention to the methodology employed in the science of geography.
404. **Physical Geography of the World (5).** Pr., junior standing.
Selected elements of physical geography. Soil, water, minerals, flora and fauna will be studied.
405. **Cultural Geography of the World (5).** Pr., junior standing.
The influence of physiographic factors in the social, economic and political development of peoples and states.
407. **World Resources and their Utilization (5).** Pr., junior standing.
The world's principal natural resources are studied primarily from the geographic point of view (location, transportation, topography, water supply, power sources, climate, etc.).
410. **Geography of Alabama (5).** Pr., junior standing.
The geographic characteristics of the State.
420. **Urban Geography (5).** Pr., junior standing and GY 102 or permission of instructor.
The location, character, and growth of urban centers, with special attention to their interior patterns of land use and cultural development.

GRADUATE COURSES

650. **Geography Seminar (5).** Pr., graduate standing or consent of instructor.
Designed for students engaged in intensive study and analysis of problems in geography.

Electrical Engineering (EE)

Professors Carroll, *Head*, Graf, Haeussermann, Honnell, Lowry, Phillips, and Russell

Associate Professors Feaster, Hickman, Nichols, Rogers, and Slagh

Assistant Professors Boland, Irwin, James, and Miller

Instructors Amoss, Bearson, Carter, Coleman, Golden, Kulas, and Pettus

262. **Circuits (3).** Coreq., PS 222, MH 265.
The first of three courses in electrical sciences; emphasis on circuit analysis.
273. **Electronic Devices (3).** Pr., EE 262.
The second of three courses in electrical sciences; emphasis on electronics.
304. **Electric Circuits (4).** Pr., MH 263 and PS 206 or PS 222.
Passive and active circuits. Not open to electrical engineering students.
305. **Electronics and Instrumentation (5).** Lec. 4, Lab. 3. Pr., EE 304.
Instrumentation systems; communications systems. Emphasis on application. Not open to electrical engineering students.
306. **Machinery and Power Transmission (5).** Lec. 4, Lab. 3. Pr., EE 304.
Electrical machinery; power transmission. Emphasis on application. Not open to electrical engineering students.
322. **Logic and Computing Systems (3).** Pr., EE 273.
Boolean Algebra and special forms of Boolean expressions; logic, logic elements, and logical design; number systems, codes, and the arithmetic element; computer organization and control; arranged laboratory experimentation.
324. **Digital Systems (3).** Pr., EE 322.
Models of digital systems; sequential circuits and systems; sequence generators and counters; information storage; analog-to-digital and digital-to-analog conversion. This course includes an arranged special projects laboratory where the students perform creative-type experimentation in the Digital Systems Laboratory.
361. **Network Analysis (5).** Lec. 4, Lab. 3. Pr., EE 262.
Topological properties of networks; the single-storage element circuit; the phasor and the frequency domain; magnetically coupled circuits; polyphase circuits; two-port networks.
362. **Linear Systems (5).** Lec. 4, Lab. 3. Pr., EE 361.
Fourier series; Fourier transforms; Laplace transforms, stability; analogous systems.
372. **Electronics I (4).** Pr., EE 273, EE 361.
Semiconductors; electronic devices; equivalent circuits of active devices.
373. **Electronics II (5).** Lec. 4, Lab. 3. Pr., EE 372, EE 362.
Amplifiers, oscillators; modulation; feedback.
381. **Electromagnetic Devices (4).** Lec. 3, Lab. 3. Pr., EE 273.
The third of three courses in electrical sciences; emphasis on electromechanics; laboratory experimentation includes instrumentation, circuits, electronics and electromechanics.
383. **Electromechanical Energy Conversion (4).** Lec. 3, Lab. 3. Pr., EE 381, EE 362.
Matrix algebra; linear transformations; symmetrical components; the generalized machine; direct current machines; induction machines; synchronous machines; systems of interconnected machines.
391. **Electromagnetics I (4).** Pr., MH 362, PS 222.
Scalar and vector fields; the electrostatic field; the magnetostatic field; Maxwell's equations; boundary conditions.
392. **Electromagnetics II (4).** Pr., EE 391.
Energy and power relations for the electromagnetic field; time varying fields; plane waves; theory and application of guided waves.
393. **Electromagnetics III (5).** Lec. 4, Lab. 3. Pr., EE 392.
Continuation of guided waves; introduction to radiating systems; coordinated laboratory demonstrations and experiments.
412. **Electrical Properties of Materials (3).** Pr., EE 393, PS 320.
Studies of the electrical properties of materials with emphasis on semiconductors.
413. **Physical Electronics (3).** Pr., EE 412.
Physical principles of electrical and electronic devices.
424. **Computer Applications in Electrical Engineering (3).** Pr., IE 205, EE 322.
Digital computer applications in electrical engineering; digital computation; time sharing; on-line applications; simulation.
425. **Computer Organization (3).** Pr., EE 322.
A simple stored program computer; data representation and algorithms for operating on data; computer units; the combination of computer components to form a structure; selected computer examples.
445. **Nuclear Instrumentation (3).** Pr., EE 373 and junior standing.
Electronic systems and devices utilized in nuclear science and technology.
446. **Analog Computers (3).** Lec. 2, Lab. 3. Pr., EE 273 and junior standing.
Computer programming including time and amplitude scaling; computer solution of linear, non-linear, and partial differential equations; simulation of various types of physical systems.

447. **Magnetic Devices (3).** Pr., EE 391, EE 373, and junior standing.
Magnetic amplifiers and related magnetic devices employing both extrinsic and intrinsic feedback.
452. **Automatic Feedback Control Systems (5).** Lec. 4, Lab. 3. Pr., EE 362.
Transfer functions; root locus plots; Nyquist and Bode diagrams; compensation.
454. **Introduction to Modern Control Theory (3).** Pr., EE 452.
Describing functions; phase plane; sampled-data systems; state space.
455. **Automatic Control Instrumentation (3).** Lec. 2, Lab. 3. Pr., EE 452.
Sensors and transducers; modulators and demodulators for a-c control systems; power amplifiers; corrective networks; prime movers.
464. **Introductory Network Synthesis (3).** Pr., EE 362 and junior standing.
Introduction to the synthesis of passive networks, with emphasis on driving point functions.
465. **Advanced Circuit Analysis (3).** Pr., EE 362 and junior standing.
Matrix analysis of circuits; network parameters; three and four terminal networks; special topics.
471. **Communication Theory (5).** Lec. 4, Lab. 3. Pr., EE 373.
Topics in communication and electronic systems.
473. **Communication Systems (3).** Pr., EE 471 and junior standing.
Theoretical topics in modern communication systems.
474. **Solid State Electronics (3).** Lec. 2, Lab. 3. Pr., EE 373, EE 391, and junior standing.
Applied solid-state physics; selected topics in advanced solid-state devices and circuits; integrated circuits.
483. **Energy Conversion and Distribution (3).** Pr., EE 383 and junior standing.
Further practical aspects of energy conversion and distribution.
485. **Power Systems Engineering (4).** Lec. 3, Lab. 3. Pr., EE 383.
Fundamentals of power systems; topics in modern power systems engineering; economic factors in power systems; use of the digital computer in power systems design and analysis.
486. **Direct Energy Conversion (3).** Pr., EE 383, EE 392, ME 301.
Fundamentals; batteries and fuel cells; thermoelectric devices; thermionic devices; photo-voltaic devices; magnetohydrodynamic power generation.
490. **Seminar.** Credit to be arranged. May be taken more than one quarter.
494. **Electromagnetic Propagation (3).** Pr., EE 393 and junior standing.
Principles of wave propagation in communication systems; study of propagation modes; introduction to interaction of electromagnetic waves and plasmas.
495. **Microwaves (3).** Pr., EE 392 and junior standing.
Analysis of distributed systems including waveguides and transmission lines; generation and detection of microwave energy; coordinated laboratory experiments and demonstrations.
496. **Antennas (3).** Pr., EE 393 and junior standing.
Analysis of radiating systems, to include individual radiators and antenna arrays; impedances in radiating system design; antenna performance measurement techniques; coordinated laboratory experiments and demonstrations.

GRADUATE COURSES

601. **Linear Analysis I (5).**
Methods of analysis, the exponential forcing function, Fourier series, Fourier transform, Laplace transform, and superposition integrals. Complex variables and contour integration.
602. **Linear Analysis II (5).** Pr., EE 601.
Generalized four terminal networks; network parameters, equivalent circuits, and interconnection of networks. Signal-flow diagrams, stability and transients on transmission lines.
605. **Active Circuits (5).** Pr., consent of instructor.
The analysis of active-device circuits: negative-resistance circuits and devices, amplifiers, oscillators, modulators, and demodulators.
610. **Power Transmission Systems (5).** Pr., EE 601.
Power transmission systems operating under both normal and fault conditions; problems of design, protection, relaying, and metering; various types of instabilities; application of digital computers to problems in power transmission.
612. **Advanced Topics in Electromechanical Energy Conversion (5).** Pr., EE 601.
Dynamic equations of motion of electromechanical systems; the generalized rotating electromechanical energy converter; dynamics of systems; the n-m symmetrical machine.
615. **Advanced Electrical Measurements (5).** Lec. 4, Lab. 3. Pr., EE 601.
Measurements of circuit parameters, current, voltage, power, frequency, and wave shape at all frequencies; capabilities and limitations of contemporary measuring equipment.
617. **Principles of Pulse Circuits (5).** Pr., EE 601.
Analysis and design of basic types of pulse forming circuits, with applications to pulse systems and laboratory work suited to the individual student's needs.
620. **Nondeterministic Systems Analysis (3).** Pr., consent of instructor.
Applications of probability, random variables, and stochastic processes in Electrical Engineering.

621. **Electronic Computer Theory (5).** Lec. 4, Lab. 3. Pr., EE 601.
General study of computer components; operational amplifiers, function generators, multipliers, stabilized power supplies; pulse circuits, memory storage devices and read-out devices; techniques of computer operation.
630. **Electromagnetism (5).** Pr., consent of instructor.
Theory and application of electromagnetism for students not specializing in electromagnetics.
633. **Nonlinear Analysis (5).** Pr., EE 601.
Detailed study of systems of nonlinear differential equations with illustrative examples drawn from models representing technological devices based on nonlinear effects.
637. **Plasma Dynamics (5).** Pr., EE 630.
A study of the dynamic properties of systems of charged particles, with emphasis on systems constrained by steady or time-varying magnetic fields. Areas emphasized are basic theory, laboratory models, and instrumentation.
639. **Switching Theory I (5).** Pr., EE 601.
Number systems, binary coding, Boolean algebra, combinational switching circuits; multiple output combinational circuits, and bilateral switching networks.
640. **Switching Theory II (5).** Pr., EE 639.
Models and elementary properties of sequential machines; sequential machine compatibility; equivalence, and state minimization; state assignment for sequential machines; asynchronous switching networks; and, speed independent switching circuit theory.
641. **Digital Systems (5).** Pr., EE 639.
Memories and the associated read and write circuitry; arithmetical units; analog-to-digital converters; digital-to-analog converters; and special purpose digital units.
642. **Advanced Topics in Switching and Automata Theory (5).** Pr., EE 639.
Current topics in the field of digital systems. This course will include a complete study of current issues of journals concerned with the design of digital systems.
645. **Network Synthesis I (5).** Pr., EE 601.
Two-terminal passive networks; properties, realizability, and principles of synthesis. Conventional and modern filter synthesis.
646. **Network Synthesis II (5).** Pr., EE 645.
Four-terminal passive networks; properties, realizability and principles of synthesis. Potential analogy and approximation problems.
- 650-1-2. **Electromagnetic Theory and Applications I-II-III (5-5-5).** Pr., consent of instructor.
A three-course sequence for students specializing in electromagnetics.
653. **Antennas (5).** Pr., consent of instructor.
Advanced treatment of radiating systems.
- 660-1-2. **Quantum and Parametric Electronics I-II-III (5-5-5).** Pr., consent of instructor.
Atomic phenomena, quantum theory, kinetic theory and statistical mechanics; applications to electronic devices and systems.
- 670-1. **Information Theory I-II (5-5).** Pr., EE 601.
Probability; random variables; and stochastic processes. Analysis of channel models and proofs of coding theorems; construction of error-correcting codes; statistical properties of information sources.
- 675-6. **Communication Theory I-II (5-5).** Pr., EE 670.
Signal detection and selection; modulation and coding; demodulation and decoding; contemporary topics in communication theory.
680. **Directed Reading in Electrical Engineering.** Credit to be arranged.
- 681-2-3. **Automatic Control Theory I-II-III (3-3-3).** Pr., consent of instructor.
Advanced analysis and design of control systems, including modern and classical control theory as applied to linear, nonlinear, continuous, and discrete systems.
690. **Seminar.** Credit to be arranged. May be taken more than one quarter.
- 691-2-3. **Advanced Automatic Control Theory I-II-III (3-3-3).** Pr., consent of instructor.
Optimal control theory for deterministic and non-deterministic systems; optimal linear filter theory; modern stability theory.
699. **Research and Thesis.** Credit to be arranged. May be taken more than one quarter.
799. **Research and Dissertation.** Credit to be arranged. May be taken more than one quarter.

Elementary Education (EED)

Professors Coss, Head, Ellisor, and Newell

Associate Professors Roughton and Sartin

Assistant Professors Allen, English, Jensen, Justice, Noland, Smith, and Wright

Instructors Adams, Sink, and Willard

Orientation

102. Orientation (1).

Helps transfers from other curricula and students pursuing the dual objectives program to understand teacher education and teaching as a profession.

103. Orientation (1).

Helps freshmen in planning their professional careers.

104. Introduction to Laboratory Experiences (1).

Required of all students completing the Teacher Education Program. Orientation to the total Laboratory Experiences Program in the School of Education with specific attention to the orientation and initiation of the Pre-Teaching Field Experience Program.

Reading Improvement

Available as a service course and as a general elective to all University students.

310. Reading Improvement (3). Lec. 2, Lab. 2. General elective. (Not open to students with credit in PG 101.)

Developmental reading for students who wish to improve their reading skills. Each student's present degree of reading efficiency is diagnosed and a program structured to his individual needs is planned and conducted.

Curriculum and Teaching

Undergraduate

301. Elementary Curriculum I; Reading and Other Language Arts; Creative Expression (10). Coreq., FED 214. Lec. 8, Lab. 6.

Skills, techniques, and materials in the language arts curriculum, and the musical and rhythmic activity program in the content of laboratory experiences with children.

302. Elementary Curriculum I; Reading and Other Language Arts (6). Lec. 5, Lab. 3.

For students who have completed the creative expression portion of this course at another institution.

303. Elementary Curriculum I; Creative Expression (4). Lec. 3, Lab. 3.

For students who have completed the language arts portion of this course at another institution.

320. Curriculum for Early Childhood Education (10). Lec. 8, Lab. 6. Pr., junior standing, coreq., FED 214.

Communication arts appropriate for children ages four through eight. Laboratory activities, to be coordinated by the Department of Elementary Education and Family and Child Development, will include observation and participation with children in the University Child Study Center, Head Start programs, and public schools.

396. Music for the Elementary Teacher (3). Pr., MU 371 or consent of department chairman.

Elective course for Elementary Education Majors who need additional instruction in music.

401. Elementary Curriculum II; Mathematics, Natural and Social Sciences (10). Coreq., FED 320. Lec. 8, Lab. 6.

Developing understandings, skills, and attitudes in the elementary mathematics and science (natural and social) curriculum with emphasis on laboratory experiences and the use and construction of learning materials.

402. Elementary Curriculum II; Mathematics (4). Lec. 3, Lab. 3.

For those students who have completed the natural and social science portion of this course at another institution.

403. Elementary Curriculum II; Natural and Social Science (6). Lec. 5, Lab. 3.

For those students who have completed the mathematics portion of this course at another institution.

420. Curriculum for Early Childhood Education II (10). Lec. 8, Lab. 6. Pr., EED 320, Coreq., FED 320.

Social and natural science experiences in the environment of children ages four through eight. Laboratory activities, to be coordinated by the Departments of Elementary Education, and Family and Child Development, will include observation and participation with children in the University Child Study Center, Head Start programs, and public schools.

425. Professional Internship in Elementary School (15). Pr., Sr. standing, Admission to Teacher Education three quarters prior to Internship, appropriate professional courses. (A) Early Childhood Education (B) Elementary Education.

(For description, see Professional Internship in School of Education Section.)

450. Analysis of Elementary Instructional Strategies (3). Pr., Professional Internship Lec. 2, Lab. 2.

Patterns of elementary curriculum and organization for instruction, including the analysis of previous and current laboratory experiences in education. Attention given to implementation of system's approach in student's area of specialization.

455. Analysis of Early Childhood Education Programs (3). Lec. 2, Lab. 2. Pr., EED 420 and Professional Internship.

Curriculum and organization of early childhood programs are evaluated. Previous and current laboratory experiences are related to current trends in early childhood education. Laboratory activities will be coordinated by the faculties in the Departments of Elementary Education, and Family and Child Development.

Advanced Undergraduate and Graduate

461. **Current Theory and Practice in the Teaching of Reading (5).** Pr., junior standing and teaching experience or consent of instructor.
Principles of reading instruction within the settings of the areas of child development, learning theories, individual differences, the role of reading in the total school and community environment, and examination of current reading materials.
474. **Problems in Improvement of Reading at the Elementary School Level (5).** Pr., junior standing and teaching experience or consent of instructor.
An examination of problem areas of effective reading instruction in grades one through nine. Emphasis on phonetic word attack skills, comprehension, vocabulary building, and the use of supplementary materials in the reading program.
496. **Music in the Elementary School (5).** Pr., junior standing.
To give the individual teacher a deeper insight into skills, techniques, and knowledge of music. Appropriate materials, adapted to social and musical interests of children, are studied and evaluated.
497. **Organization of Elementary School Music (3).** Pr., junior standing and EED 300C or IED 423.
Theory and development of the music program in the elementary school.

Graduate

620. **The Early Childhood Education Program (3-10).**
Curriculum, teaching-learning process, materials, and facilities appropriate for young children will be studied in a laboratory environment.
621. **Current Trends in Early Childhood Education (5).** Pr., EED 620.
An investigation of developments, issues, and trends in early childhood education curriculum.
622. **Seminar in Early Childhood Education (3-10).** Pr., EED 621.
Contemporary problems in early childhood education. Intensive study in areas of interest and need.
623. **Practicum in Early Childhood Education (3-10).** Pr., EED 621.
Integration of theory and practice which enables the student to test within the school environment appropriate teaching-learning programs.
624. **Research in Early Childhood Education (5).** Pr., EED 621.
Review, analysis, and interpretation of research in areas of early childhood education.
641. **Diagnostic Procedures in Reading (5).** Pr., EED 461 or consent of department chairman.
Administration, scoring and interpretation of specific reading tests to determine causes of reading disability. Formal and informal evaluation procedures for regular and remedial classrooms. Screening tests for contributing factors to reading disability. Analysis and implication for correction of reading difficulties.
642. **Remedial Procedures in Reading (5).** Lec. 3, Lab. 4. Pr., EED 641 or consent of department chairman.
Appropriate individual and group techniques for correcting deficiencies and practice in continuing evaluation of reading difficulties. Use of equipment and materials with children having reading problems.
646. **Studies in Education (1-3).** Pr., one quarter of graduate study.
A research problem will be selected in consultation with the professor who will supervise it. The problem should contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)
649. **The Elementary School Program (5).**
Major curriculum areas and teaching practices in the modern elementary school. Attention given to implications of research and theory for the total elementary school program.
650. **Seminar in Elementary Education. 3-10 hours.** (Credit not to exceed 10 hours.)
Critical analysis and evaluation in elementary education with emphasis on improving the instructional program. An opportunity to do intensive study on selected topics.
656. **Directed Individual Study in Reading Diagnosis and Reading Remediation (5).** Pr., EED 642 or consent of departmental chairman.
Clinical experiences in diagnosing problems in reading and related areas. Also clinical experiences in the remediation of reading problems.

Curriculum and Teaching in the Respective Areas of the Elementary School Program

Each of these courses 651, 652, 653, and 654 applies to the following areas of the elementary school program: (G) Language Arts, (H) Mathematics, (K) Science, and (L) Social Science.

651. **Research Studies in Education in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the school.

652. **Curriculum and Teaching in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Teaching practices and reappraisal of selecting experiences and content for curriculum improvement.
653. **Organization of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Program, organization, and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
654. **Evaluation of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization.

Study in other teaching areas including art; dramatic arts; gifted; mental retardation; music; speech, speech correction; health, physical education and recreation; and industrial arts is available also to students in elementary education.

- 659-660. **Practicum in Areas of Specialization (5-5).** Permission of major professor. Provides advanced graduate students with supervised experience with emphasis on the application of concepts, principles, and skills acquired in previous course work.

Thesis

699. **Thesis Research.** (Credit to be arranged.) May be taken more than one quarter.
798. **Research and Thesis (5).**
799. **Doctoral Research and Dissertation (TBA).**

For advanced courses in curriculum, educational media, higher education, see IED.

Engineering Graphics (EG)*

Professor Francis, *Head*

Associate Professors Ingram, Little, McClung, and Thornton

Assistant Professor Clement

102. **Engineering Drawing I (2).** Lab. 6. Pr., Plane Geometry. Use of instruments; lettering practice; geometric constructions; principle views in projection; auxiliary and section views; dimensioning; detail working drawings; and isometric projection.
104. **Descriptive Geometry (2).** Lab. 6. Pr., EG 102 and Solid Geometry. Basic principles pertaining to points, lines, and planes; including problems on sections, developments, and intersections of solids.
105. **Engineering Drawing II (2).** Lab. 6. Pr., EG 102. Technical sketching; reading analysis of shop drawings; machine parts, detail and assembly drawings; types and arrangement of materials; titles and symbols; tracings, printing, and other reproduction methods; steel and timber structures; riveting and welding.
106. **Graphical Methods (2).** Lab. 6. Pr., EG 102 or one credit of Mechanical Drawing in an accredited high school. Technical sketching, slide rule, statistics and graphical analysis, digital and analog computers and vectors. This course is designed to present the fundamental graphical concepts and related materials as they apply to modern technology and engineering.
204. **Kinematics of Machines (3).** Lec. 2, Lab. 3. Pr., EG 104, EG 105, and coreq., PS 201. Spring quarter. Graphical analysis of the fundamental elements of machines, including: definitions, velocity and acceleration diagrams, methods of transmission of motion by links, cams, gears, gear trains, and flexible connectors.
205. **Applied Graphic Statics (2).** Lec. 1, Lab. 3. Pr., EG 105 and coreq., PS 201. Resultants and equilibrium of concurrent, parallel and non-parallel forces; moments of parallel forces; general cases of reaction of coplanar forces; stresses in simple trusses by joint and section methods; cranes, derricks, dredges, and frames with bending members; static forces in machines with and without friction.
206. **Technical Sketching (2).** Lab. 6. Pr., EG 104 and EG 105. Technical lettering, block and architectural; types of illustrations, purpose and use; sketching techniques; pictorial drawings, oblique, isometric, dimetric, trimetric; perspective; shading; use of the airbrush; charts; reproductions of drawings.
306. **Advanced Graphics for Engineers (3).** Lec. 2, Lab. 3. Pr., EG 104, MH 361. Vector geometry, functional scales, nomography, combination of observations, empirical equations, and graphical calculus.

*To be combined with Industrial Laboratories to form the Department of Technical Services.

English (EH)

Professors Patrick, *Head*, Amacher*, Benson, Breyer, Brittin, Burnett, Current-Garcia, Haines, M. Jones, Littleton, Nist, and Woodall

Associate Professors W. S. Allen, Durant, Hudson, Michael, Rose, and Wright

Assistant Professors Butler, Faulk, Logue, McLeod, Melzer, Monteser, Mowat, Patterson, and Stroud

Instructors J. W. Allen, Bekus, Brown, DeLeeuw, Hug, K. Jacobs, Kidd, Lambert, Lehmann, Martin, Rachels, Roden, Schneider,

J. P. Waters, Weissinger, Welsh, and Williams

The requirements for the English major enrolled in the School of Arts and Sciences are stated on page 92 and for the English major enrolled in the School of Education, on page 130.

English Composition (101-102-103 or 105-106) is required of all students and is a prerequisite for all other courses in English.

101-102-103. English Composition (3-3-3). EH 101 pr. for EH 102; EH 102 pr. for EH 103. All quarters.

The essentials of composition and rhetoric. Reading of selected fiction, poems, and plays.

105-106. Honors Freshman English (3-3). EH 105 pr. for EH 106. All quarters.

Reading and composition for superior students. Students earning a C or better final grade in both courses will receive 9 hours of credit. The student failing under a C grade changes to the regular sequence (101-102-103) and completes a total of three courses. (Departmental approval required for admission to this sequence.)

141. Medical Vocabulary (3). All quarters.

Prefixes, suffixes, and the more common root words of medical terminology.

253-254-255. Survey of English Literature (3-3-3). EH 253 pr. for 254; EH 253-254 pr. for EH 255. All quarters.

English literature from Beowulf to the present.

260-261-262. Survey of Literature of Western World (3-3-3). Credit in this sequence precludes credit in EH 253-254-255.

Master works from Homer to Faulkner; 260, Classic and Medieval; 261, Renaissance and Eighteenth Century; 262, Nineteenth and Twentieth Centuries.

301. Creative Writing (3). General elective. Fall, Spring.

The writing and criticizing of short stories. But the student may be permitted to write poetry, drama, or any other form of imaginative literature.

302. Creative Writing (3). General elective. Fall, Spring.

A continuation of English 301.

304. Technical Writing (3). All quarters. Not open to students with credit in EH 345.

Report writing for engineers.

310. Word Study (3). General elective. Fall, Spring.

The history of English words and their meanings with the object of improving the student's command of his language and illustrating for him some of the patterns in the development of human thought.

312. The European Novel (5). Spring.

The reading and analysis of significant novels by major European writers.

320. An Introduction to Drama (3). General elective. Winter.

Representative tragedies and comedies of Europe from antiquity to the present. Such figures as Sophocles, Moliere, Shakespeare, and Ibsen will be considered.

325. The Short Story (5). Winter.

The development of the short story in America and Europe from the early nineteenth century to the present.

330. Medieval English Literature (5).

This course concentrates on *La Morte d'Arthur*, *Sir Gawain and the Green Knight*, *Pearl*, *Piers Plowman*, the *Owl and the Nightingale*, medieval drama. Glossed texts in the original dialects are used. Excludes Chaucer.

340. The Classical Background (5). Fall. Not open to students with credit in EH 108.

Readings from the major Greek and Roman writers. The texts studied are chosen with particular attention to their subsequent influence upon English and American literature.

345. Business and Professional Writing (5). All quarters. Not open to English majors or minors. Credit in the course precludes credit in English 304.

Practical composition including abstracting, correspondence, and reports for students in business.

*On leave, 1969-70.

350. **Shakespeare's Greatest Plays (3). General elective. Fall. Not open to students with credit in EH 451-452.**
Some of Shakespeare's masterpieces.
352. **Contemporary Fiction (5). Fall.**
American and British novelists from Lawrence to Faulkner.
353. **Contemporary Drama (5). Spring.**
Continental, British, and American dramatics from Ibsen to the present day.
357. **Survey of American Literature (5). Fall.**
American literature from the beginning to 1860.
358. **Survey of American Literature (5). Spring.**
American literature from 1860 to the present.
360. **Continental Fiction (3). General elective. Winter.**
Representative European short stories and novels.
361. **History of English Drama (5). Winter.**
English drama from the medieval period to 1900.
363. **Eighteenth Century English Literature (5). Fall.**
Poetry and prose from Dryden through Shenstone.
365. **Southern Literature (3). General elective. Spring.**
372. **The American Novel (5). Winter.**
The development of the American novel from the beginning to 1900.
381. **The Literature of the Age of Reason (3). General elective. Fall.**
Rationalism, its assumptions and effects, political, social, and scientific as seen in the works of such major eighteenth-century writers as Locke, Johnson, Burke, Voltaire, and Rousseau.
390. **Advanced Composition (5). All quarters.**
The practice and theory of expository writing; the command of language for the clear and forceful communication of ideas.
394. **Introduction to Linguistics (5). Winter.**
The phonological, morphological, and syntactical systems of late modern English.
401. **English Syntax (5). Fall, Spring. Pr., junior standing.**
A detailed survey of the underlying structure of English sentences, with some consideration of the historical development of those structures.
405. **Chaucer (5). Not open to graduate students.**
The major works of Chaucer in Middle English.
410. **European Literature (5). Winter. Pr., junior standing.**
The principal European literary figures and trends from the Renaissance to the present, with emphasis on the literature of Italy, France, and Germany.
425. **Comedy and Satire (5). Pr., junior standing.**
The theory and appreciation of two closely interrelated literary genres, based on the reading of representative examples from the literature of the Western World.
430. **The Craft of Fiction (5). Pr., junior standing, EH 301-302, consent of instructor. Winter.**
The writing of fiction.
441. **History of the English Language (5). Spring.**
The chronological development of the English language.
450. **Contemporary Poetry (5). Winter. Pr., junior standing.**
The chief modern poets of England and America.
- 451-452. **Shakespeare (5-5). Fall, Winter, Spring. Pr., junior standing. Credit for either or both of these courses excludes credit for EH 350.**
The first quarter deals with the plays written before 1600, emphasizing comedies; the second, with the plays written after 1600, stressing tragedies.
456. **The English Romantic Movement (5). Spring. Pr., junior standing.**
Romantic poetry from Gray to Keats.
457. **Victorian Literature (5). Winter. Pr., junior standing.**
The major poets and nonfiction writers from 1830 to 1890.
459. **Poetry and Prose of the English Renaissance (5). Fall. Pr., junior standing.**
The nondramatic literature of the Tudor Period.
463. **Eighteenth Century English Literature (5). Spring. Pr., junior standing.**
Poetry and prose from Johnson through Blake.
- 481-482. **English Novel (5-5). Fall, Winter. Pr., junior standing.**
The first quarter: Development of fiction from the Greek Romances down through the Renaissance and then concentrates on the great English novelists of the eighteenth century. The second quarter: The English novel from Jane Austin to Thomas Hardy.
491. **American Poetry (5). Fall, alternate years. Pr., junior standing.**
Major American poets from the Colonial period to 1920.

492. American Drama (5). Fall, alternate years. Pr., junior standing.
American dramatic and stage history from Colonial times to the nineteenth century, with emphasis on developing tastes and techniques.
495. Southern Literature (5). Spring. Pr., junior standing. Not open to students with credit in EH 365.
The poetry, fiction, and nonfiction prose writings in the South from Revolutionary times to the present, with major emphasis centering on Southern regional attitudes and trends.
- 498-499. Readings for Honors (5-5). Pr., junior standing with a minimum of 2.0 overall average, a 2.5 average in at least five upper division English courses, and the consent of the English Department.
Individual reading programs in a specific period or phase of literature or language, as determined by the instructor and student. An honors essay and a written examination will be required.

GRADUATE COURSES

610. Introduction to Graduate Study (5). Summer, Fall, Winter.
- 611-612. Studies in the History and Interpretation of Literature (5-5). Summers only.
614. The Theory of Prose Fiction (5).
Methods and techniques of prose fiction, particularly as they developed during the late nineteenth and early twentieth centuries. The course will focus on the close study of selected novels and criticism.
- 616-617. Studies in the American Language (5-5). Summers only.
620. The English Language I: Old English (5). Fall.
621. The English Language II: Middle and Modern English to 1500 (5). Winter Pr., EH 620.
623. Beowulf (5). Winter. Pr., EH 620.
625. Medieval Literature (5). Fall.
626. Chaucer (5). Spring.
627. Linguistics I: Phonology and Morphology (5). Fall, Summer.
628. Linguistics II: Syntax and Grammar (5). Summer, Winter.
629. Linguistics III: Formal Stylists (5). Spring.
631. Elizabethan and Jacobean Drama (5). Fall.
632. Spenser (5). Spring 1970. Alternates in Spring with 635.
633. Studies in the Poetry and Prose of the English Renaissance (5). Winter.
634. Poetry and Prose of the Seventeenth Century (5). Winter.
635. Studies in Shakespeare (5). Alternates in Spring with 632.
636. Milton (5). Spring.
640. Restoration and Eighteenth Century English Drama (5). Spring.
641. Studies in the Age of Pope (5). Fall.
642. Studies in the Age of Johnson (5). Winter.
650. Studies in English Romanticism (5). Winter.
652. Victorian Poetry (5). Spring.
653. Victorian Prose (5). Fall.
654. Studies in the Nineteenth Century English Novel (5). Spring.
660. Modern Poetry (5). Spring.
661. Modern Fiction (5). Winter.
662. Studies in Twentieth Century Literature (5). Fall.
670. American Literature of the Colonial and Revolutionary Periods (5). Spring.
671. Studies in American Literature, 1800-1860 (5). Alternates in Summers and Winters with 673.
672. Studies in American Literature, 1860-1914 (5). Fall.
673. Studies in the Literature of the South (5). Alternates in Summers and Winters with 671.
680. The History of Literary Criticism (5). Alternates in Summers and Winters with 681.
681. The History of Literary Criticism (5). Continuation of EH 680. Alternates in Summers and Winters with 680.
- 684-685. Directed Individual Study (5-5).

690. **Continental Romanticism (5).**
Cross-currents and influences among the literature of Europe during the Romantic Period, with attention to the effects of European Romanticism on English writers.
699. **Research and Thesis (5).**
799. **Research and Dissertation (5).**

Family and Child Development (FCD)

Professors Hodson and Rose
Associate Professors Maxwell, *Head*, and Layfield
Assistant Professors Current-Garcia and Hinton
Instructors Crawford and Porter

110. **Contemporary Home Economics (1).** Fall, Winter, Spring.
Philosophy and new directions of Home Economics.
207. **Prenatal and Infant Development (3).** Lec. 2, Lab. 2.
Principles of growth and development of children from conception through second year of life.
208. **Physical Health in Early Childhood (2).**
Early childhood diseases and their effects on individual development, the family, and society.
217. **Comparative Family Life (3).**
The impact of cultural variations upon the structure and function of the family.
257. **Family and Human Development (3).**
Principles of human development as it is affected by the family and a study of the family as it affects and is affected by the culture.
304. **Home and Family Life (3).** Each quarter.
Male and female roles in mate choice, marriage, adjustment, parenthood and marriage problems. Open to men and women.
307. **Growth and Development of Children (5).** Lec. 3, Lab. 4. Pr., PG 211, SY 201.
The mental, physical, social and emotional growth and development of children with emphasis on the early years. Students observe and participate in the care of children in the child study laboratories. Laboratory activities will be coordinated by the faculties in the Departments of Family and Child Development and Elementary Education.
308. **Mental Health in Early Childhood (3).** Lec. 2, Lab. 2.
The understanding of emotions and means of coping with them to safeguard mental health of individuals and society.
310. **Techniques of Interviewing (2).** Pr., approval of department.
Principles and techniques of interviewing and establishing a helping relationship with individuals and groups.
317. **Adolescent and the Family (5).** Lec. 4, Lab. 2. Pr., FCD 207, 307 or consent of instructor.
Growth and development of the adolescent in relation to formative influences, problem areas, and implications.
323. **Management For Modern Living (3).** Pr., junior standing.
Management of human and nonhuman resources for the maximum development of the individual and the family.
327. **The Child in a Culturally Disadvantaged Family (5).** Lec. 4, Lab. 2.
Conditions in society disadvantageous to growth and development of children.
357. **The Aged and His Family (3).** Lec. 2, Lab. 2.
The aged and his family as affected by problems of health, finances, leisure time, housing and relationships.
409. **Independent Studies.** Credit to be arranged (1-3). Pr., consent of instructor and department head. May be taken only one quarter.
Individual course of study to be designed by professor in response to special non-recurring academic need of student.
417. **Guidance of Children (3).** Lec. 3. Pr., FCD 307, and junior standing.
Environmental factors affecting the development of children in the home and community. Emphasis is given to principles and methods of guidance. Students participate in the guidance of the children in both the nursery school and kindergarten.
- 417L. **Guidance of Children Laboratory (2).** Lab. 6. Laboratory work in guidance of children. Hours to be arranged. Must be taken concurrently with the corresponding lecture course.
437. **Teaching Methods in Preprimary Education (3).** Lec. 3. Pr., junior standing.
Organization and management of a nursery school and kindergarten, including selection of equipment. Special units of work will be given in reading and story telling, nature, music, art, and construction of play materials for children.

- 437L. Teaching Methods in Preprimary education laboratory (2). Lab. 6. Laboratory work in the child study center. Hours to be arranged. Must be taken concurrently with the corresponding lecture course.
440. Management Problems in the Home (3). Lec. 2, Lab. 2. Pr., FCD 323, FCD 457, junior standing.
The processes of decision-making in families for realization of values and goals through the effective use of human and material resources. Supervised observation in selected homes and analysis of case studies.
443. Home Management Residence (5). Each quarter. Pr., junior standing, FCD 110, CA 113, CA 115, CA 116, NF 119, FCD 257, FCD 323, CA 431.
Residence in the home management house gives actual experience in different phases of homemaking with emphasis placed on the management process, satisfactory group relations, and development of individual initiative.
447. Directed Teaching in Preprimary Education (5). Lec. 2, Lab. 9. Pr., junior standing and FCD 437.
An advanced course in Nursery School and Kindergarten Education. The student will assume increasing laboratory responsibilities for the guidance of children under supervision of the staff.
457. Family Relationships (5). Fall, Spring.
Interpersonal relationships among family members, with attention to human development, training and guidance of children.
463. Family Economics (5). Lec. 5. Winter, Summer. Pr., junior standing, CA 453 or equivalent.
Budgeting and consumer problems faced by the family.
467. Parent Education (5). Lec. 3, Lab. 4. Pr., junior standing and FCD 307.
Principles of working with parents on both an individual and on a group basis. Laboratory activities will be coordinated by the faculties in the Departments of Family and Child Development and Elementary Education.
497. Internship in Agencies Serving Children and Families (5-5). Pr., SY 406, FED 434, FCD 310 or approval of department head.
Field experiences to be arranged in approved community agencies or groups which work with children and families. All placements to be made on an individual basis and supervised by staff.

GRADUATE COURSES

601. Seminar (5).
A. Family Relations; B. Child Development; C. Home Management; D. Family Economics.
603. Home Economics in Higher Education (5).
The effects of scientific, technological and social developments on the family and the Home Economics profession as they have implications for higher education in this discipline. Emphasis: current trends in subject matter areas, scope and program development, administration, and instructional resources.
605. Methods of Research in Home Economics (3).
Research and investigation methods applicable to the various areas of Home Economics. Required of all graduate students in Home Economics.
609. Special Problems. Credit to be arranged (2-5). A. Family Relations; B. Child Development; C. Home Management; D. Family Economics. Pr., consent of instructor. May be taken more than one quarter. Not to exceed 5 hours credit toward minimum of 45 for M.S.
630. Trends and Supervision in Home Management (5). Pr., FCD 323 and FCD 443 or permission of instructor.
Developments, trends and supervision in home management.
631. Readings in Home Management (5). Pr., FCD 323.
An analysis and evaluation of literature and research studies in Home Management.
634. Economic Problems of Families (5). Pr., FCD 323, CA 453.
Income distribution, cost of living, the business cycle, taxation, and economic provisions for unemployment, health, accidents, old age, and dependents.
635. Advanced Home Management and Equipment (3). Pr., graduate standing.
A three-week course offered in summer quarters only.
636. Analysis of Home Management Problems (5). Lec. 3, Lab. 4. Pr., FCD 323 or equivalent, or consent of instructor.
Work analysis and adaptation of technological improvements in using management principles of human and non-human resources (time, energy, and income).
670. Personality Development (5).
The development of personality of the child with particular emphasis on the effects of family interaction in the early years.
671. Supervision of Child Study Centers (5). Lec. 3, Lab. 4. Pr., FCD 675.
Practical supervision of programs for young children.

- 675. Pre-School Guidance (5).** Lec. 3, Lab. 4-6. Pr., FCD 307.
An application of methods and techniques of guidance in laboratory groups of pre-school children.
- 676. The Family and Its Relationships (5).**
Intensive study of the family and its effect upon personality development.
- 677. Readings in Family Life and Child Development (5).**
Current literature and research concerning the pre-school child; the school-age child; the adolescent; the young adult; problems of later maturity; changing family patterns.
- 678. Advanced Child Development (5).** Pr., FCD 307.
Growth and development of children with emphasis upon environmental and developmental factors affecting growth and development and implications for guidance. Laboratory experiences where needed.
- 679. Group Approaches to Family Counseling (5).** Pr., CED 628, FCD 670, FCD 676.
Small group counseling for family-related problems through the therapeutic understanding of human relationships.
- 699. Research and Thesis. Credit to be arranged.**
Required of all students under the Thesis Option in any field.

Foreign Languages (FL)

Professor Peak, *Head*

Research Professor of Comparative Linguistics Skelton

Associate Professors Hamilton and Pidhainy

Assistant Professors Helmke, Posniak, Reyes, and Warbington

Instructors Castro, Cox, De Arman, Friedman, Gaar, Headley, Jimenez, Kennedy, Millman, Vandegrift, Wakeford, and Wolverton

A student who has satisfactorily completed two or more years of foreign language in high school and who uses credit for these courses for college admission generally should continue that language at the intermediate level. Therefore, college credit is not normally granted for an elementary course when the student has used such high school credit for college admission.

French

- 121. Elementary French I (5).**
To give the student the fundamentals of the French language together with as much simple reading as time will permit. Constant stress will be placed on oral and aural practice.
- 122. Elementary French II (5).** Pr., FL 121 or equivalent.
A continuation of FL 121.
- 221. Intermediate French I (5).** Pr., FL 122 or equivalent.
Provides practice in reading, writing and speaking current French. Special emphasis is placed on the acquisition of vocabulary through reading and composition.
- 222. Intermediate French II (5).** Pr., FL 221 or equivalent.
An introduction to French literature. Representative works of moderate difficulty and high literary value will be read. Practice in speaking and writing will continue.
- 321. Advanced French I (5).** Pr., FL 222 or equivalent.
Outstanding prose works, especially short stories and novels. Continued emphasis on vocabulary building through composition based on literature read.
- 322. Advanced French II (5).** Pr., FL 222 or equivalent.
A continuation of FL 321.
- 421. Contemporary French Literature I (5).** Pr., FL 322 or equivalent.
Selected readings in the literature of the nineteenth and twentieth centuries. Advanced practice in conversation.
- 422. Contemporary French Literature II (5).** Pr., FL 322 or equivalent.
A continuation of FL 421.
- 423. Survey of French Literature (5).** Pr., FL 422 or departmental approval.
The development of French literature from the *Chansons de geste* through the classical period.
- 424. Survey of French Literature (5).** Pr., FL 422 or departmental approval.
A continuation of FL 423. The development of French literature from Romanticism to the modern period.
- 427. Independent Work in French I (5).** Pr., FL 423 or FL 424 or departmental approval.
For the superior student majoring in French. A reading course to be completed with a term paper.
- 428. Independent Work in French II (5).** Pr., FL 423 or FL 424 or departmental approval.
For the superior student majoring in French. A reading course to be completed with a term paper.

Spanish

131. **Elementary Spanish I (5).**
Structure of the Spanish language, with practice in speaking, reading, and writing.
132. **Elementary Spanish II (5). Pr., FL 131 or equivalent.**
A continuation of FL 131.
231. **Intermediate Spanish I (5). Pr., FL 132 or equivalent.**
Designed to acquaint the student with the civilization of Spain while providing practice in reading, speaking, and writing.
232. **Intermediate Spanish II (5). Pr., FL 231 or equivalent.**
Spanish literature. Representative works of outstanding Spanish writers will be examined. Practice in writing and speaking continues.
331. **Advanced Spanish I (5). Pr., FL 232 or equivalent.**
Recognized works of Spanish and Spanish-American writers with a review of Spanish grammar and practice in composition and conversation.
332. **Advanced Spanish II (5). Pr., FL 232 or equivalent.**
A continuation of FL 331. Continued emphasis on vocabulary building through composition and conversation.
431. **Contemporary Spanish-American Literature I (5). Pr., FL 332 or equivalent.**
Selected readings in Spanish-American Literature as a general survey, but with emphasis on the post-modernismo period. Written and oral reports in Spanish.
432. **Contemporary Spanish Literature II (5). Pr., FL 332 or equivalent.**
Selected readings in the literature of Spain with emphasis upon the post-civil war period. Written and oral reports in Spanish.
433. **Survey of Spanish Literature (5). Pr., FL 432 or departmental approval.**
The development of Spanish literature from *Poema del mio Cid* through the Golden Age.
434. **Survey of Spanish Literature (5). Pr., FL 432 or departmental approval.**
A continuation of FL 433. The development of Spanish Literature from the Decadencia to the contemporary period.

German

151. **Elementary German I (5).**
The structure of the German language, with practice in speaking, reading, and writing.
152. **Elementary German II (5). Pr., FL 151 or equivalent.**
A continuation of FL 151.
251. **Intermediate German I (5). Pr., FL 152 or equivalent.**
Provides the student with an understanding of the civilization of Germany while providing practice in reading, writing, and speaking the language.
252. **Intermediate German II (5). Pr., FL 251 or equivalent.**
German literature. Representative works of various German authors will be studied, with continuing practice in writing and speaking.
351. **Advanced German I (5). Pr., FL 252 or equivalent.**
Recognized works of German writers, with a review of German grammar and practice in composition.
352. **Advanced German II (5). Pr., FL 252 or equivalent.**
Recognized works of German writers. Emphasis on vocabulary building through composition.
451. **Contemporary German Literature I (5). Pr., FL 352 or equivalent.**
Selected readings in German literature of the nineteenth and twentieth centuries. Advanced practice in conversation.
452. **Contemporary German Literature II (5). Pr., FL 352 or equivalent.**
A continuation of 451.
453. **Survey of German Literature (5). Pr., FL 452 or departmental approval.**
The development of German literature from the beginnings through the Age of German Classicism (Schiller and Goethe).
454. **Survey of German Literature (5). Pr., FL 452 or departmental approval.**
A continuation of FL 453. The development of German literature from the Age of Romanticism to the present.
457. **Independent Work in German I (5). Pr., FL 453 or FL 454 or departmental approval.**
For the superior student majoring in German. A reading course to be completed with a term paper.
458. **Independent Work in German II (5). Pr., FL 453 or FL 454 or departmental approval.**
For the superior student majoring in German. A reading course to be completed with a term paper.

Italian

241. **Elementary Italian I (5).** Pr., consent of instructor.
The structure of the Italian language, with practice in speaking, reading, and writing.
242. **Elementary Italian II (5).** Pr., FL 241 or equivalent.
A continuation of FL 241.
341. **Intermediate Italian I (5).** Pr., FL 242 or equivalent.
The civilization and the literature of Italy while providing practice in reading, writing, and speaking Italian.

Latin

111. **Elementary Latin I (5).**
To present the fundamental principles of the language so that the student may progressively develop some ability to read, write, and pronounce the language.
112. **Elementary Latin II (5).** Pr., FL 111 or equivalent.
Continuation of Latin I with emphasis on rapid reading.
211. **Intermediate Latin I (5).** Pr., FL 112 or equivalent.
Selections from Nepos' Lives, Caesar's Gallic or Civil Wars.
212. **Intermediate Latin II (5).** Pr., FL 211 or equivalent.
Selections from Cicero, Sallust, and Ovid.
311. **Advanced Latin I (5).** Pr., FL 211 or FL 212 or equivalent.
Selections from Vergil's *Aeneid*, *Eclogues*, and *Georgics*.
312. **Advanced Latin II (5).** Pr., FL 211 or four years of high school Latin.
Ovid's *Metamorphoses*.

Portuguese

261. **Elementary Portuguese I (5).** Pr., consent of instructor.
The structure of the Brazilian language, with practice in speaking, reading, and writing.
262. **Elementary Portuguese II (5).** Pr., FL 261 or equivalent.
A continuation of FL 261.
361. **Intermediate Portuguese I (5).** Pr., FL 262 or equivalent.
Brazilian civilization and Luso-Brazilian literature.

Russian

171. **Elementary Russian I (5).**
The Russian language, with practice in reading, speaking, and writing.
172. **Elementary Russian II (5).** Pr., FL 171 or equivalent.
A continuation of FL 171.
271. **Intermediate Russian I (5).** Pr., FL 172 or equivalent.
Graded reading in Russian for vocabulary building and oral practice.
272. **Intermediate Russian II (5).** Pr., FL 271 or equivalent.
Readings in Russian civilization and oral practice in use of the language.
371. **Advanced Russian I (5).** Pr., FL 272 or equivalent.
Readings in Contemporary Russian literature, grammar review and oral practice.
372. **Advanced Russian II (5).** Pr., FL 371 or equivalent.
A continuation of FL 371.

GRADUATE COURSES

601. **Linguistic Science (5).** Pr., consent of instructor.
The various aspects and areas of linguistic study, including an examination of language distribution, relationships, types, changes, and development, and a brief introduction to phonetic structure, grammatical forms, and syntax.
603. **Romance Linguistics (5).** Pr., consent of instructor.
The development of Latin into the medieval and modern forms of the Romance languages, involving a comparison of Classical Latin with Early and Vulgar Latin and the main changes in phonology, morphology, and syntax of the latter into Italian, Spanish, Portuguese, French, and Roumanian. Some attention will be given to the history of Rome, of the Empire, and of the Celtic, Germanic, and Moorish invasions.
605. **Indo-European Linguistics (5).** Pr., consent of instructor.
Historical linguistics involving the reconstruction of proto Indo-European and the reflexes in the dialects, especially Latin, Greek, Sanskrit, and Gothic.
631. **Old Spanish Language and Literature (5).**
The internal and external history of the language together with readings from the *Poema del mio Cid*, Gonzalo de Berceo, Juan Ruiz, and Alfonso el Sabio. The role of the Ligurians, Iberians, Carthaginians, Greeks, Celts, Romans, Vandals, Visigoths, and Moors in the history of Spain and the Spanish language will be examined.

632. **Spanish Prose Fiction to 1700 (5).**
Development of early prose fiction through the Siglo de Oro, with special emphasis on the works of Cervantes.
633. **Spanish Prose Fiction Since 1700 (5).**
The continuing development of fiction from the eighteenth century to modern times, with special attention to the novel of the twentieth century.
634. **Spanish Drama to 1700 (5).**
Development of the drama through the Siglo de Oro, with emphasis on the chief works of Lope de Vega, Calderon, Tirso de Molina, and Ruiz de Alarcón.
635. **Spanish Drama Since 1700 (5).**
The continuing development of the drama through the Decadencia, Romanticismo, Siglo XIX, Generación de '98, Modernismo, and the Posguerra.
636. **Poetry of Spain (5).**
The development of poetic forms, of the leading movements and principal poets, from the earliest *jarchas* to the contemporary.
637. **Spanish American Literature (5).**
A broad survey of the principal literary works of Spanish America from 1500 to the present.
638. **Spanish Bibliography (5).**
An intensive examination of the principal sources, collections, texts, histories, dictionaries, and reference works, useful to the Spanish scholar.
699. **Research and Thesis (5).**

Forestry (FY)*

Professors DeVall, Head, Christen, Hodgkins, and Johnson
Associate Professors Beals, Posey, and Somberg
Assistant Professors DeBrunner and Larsen

104. **Forest Cartography (2). Lab. 6.**
Use of drafting instruments, engineering lettering, conventional map signs and symbols and application to planimetric and topographic maps, map design and grids.
105. **Forestry Convocation (0). Fall, Winter, Spring.**
A semi-quarterly forum required of all forestry students except in summer quarters. Visiting lecturers from all segments of federal, state, and private forestry will discuss topics of importance to the forest economy and interest to students.
201. **Dendrology (5). Lec. 3, Lab. 6. Fall. Pr., BI 102, or permission of instructor.**
Taxonomy and identification of the important forest trees of the United States and Canada. The major natural species groups, their geographic distribution and their typical site occurrence are outlined.
203. **Silvics I (5). Lec. 4, Lab. 3. Winter. Pr., BI 102, CH 104.**
Relationships between site factors and the internal structure, metabolism and growth of individual trees.
204. **Forest Mensuration (5). Lec. 3, Lab. 6. Fall. Pr., CE 201. Coreq., FY 201.**
Measurement theory; methods and equipment used in measuring trees and stands; units of measure used in forestry; log rules and volume tables; condition class mapping; elementary timber estimating; stand and stock tables.
205. **Wood Identification and Uses (3). Lec. 2, Lab. 3. Spring.**
Identification of the commercial woods of the United States by macroscopic features, elementary wood anatomy, sufficient to permit an understanding of wood properties and the suitability of certain woods for specific uses. Introduction to the major uses of wood and the basic principles of lumber grading.
206. **Wood Measurements (3). Lec. 2, Lab. 3. Spring. Pr., MH 160 or equivalent.**
Wood measurements oriented toward the needs of students in wood technology.
207. **Silvics II (5). Lec. 3, Lab. 6. Spring. Pr., AY 305, FY 201, FY 203.**
Effects of site, competition and cultural practices on the establishment, development and yield of forest stands. Reciprocal effects of forest cover on the site.
302. **Forest Fire Control and Use (3). Lec. 2, Lab. 3. Winter. Pr., junior standing.**
Forest fire protection. Use of fire as a silvicultural tool. Public relations problems. Extended field trips will be made.
303. **Forest Recreation (3). Lec. 1, Lab. 6. Summer.**
Planning and administration of recreation in forest land management. Extended field trips will be made.
309. **Sampling (5). Lec. 4, Lab. 3. Fall. Pr., MH 162 or consent of instructor.**
Basic statistical and sampling concepts and procedures as applied to forestry problems.
310. **Advanced Mensuration (3). Lec. 2, Lab. 3. Winter. Pr., FY 204, FY 309.**
Statistical decision theory. Stratified sampling, including testing for effectiveness of stratification, allocation of the sample, and sample size. Inventories with probability proportional to size (point sampling). Forest growth and yield. Nature and use of yield tables. Stand projection methods. Growth percent.

*The prerequisites may be waived, by permission of the instructor concerned, for junior and senior students in other departments.

311. **Wood Anatomy (5).** Lec. 3, Lab. 6. Fall. Pr., FY 205.
Identification of commercial woods of industry by microscopic features. Comparative anatomy and phylogenetic relationships. Introduction to microtechnique and maceration techniques.
313. **Farm Forestry (5).** Lec. 3, Lab. 4. Fall, Winter. Pr., sophomore standing.
(Not open to students in the degree Forestry curricula.) The place of farm forests in agricultural economy. The application of forestry principles to the problems of the farm woodland, especially as they relate to Alabama conditions.
330. **Forest Products (5).** Lec. 3, Lab. 6. Fall. Pr., FY 205 or FY 311.
Specifications, grading and manufacture of wood products derived from forest lands, including an introduction to pulp and paper manufacture and other chemical and mechanical processes utilizing wood.
370. **Wood as an Art Medium (3).** Lec. 1, Lab. 4. Winter. For students majoring in the Fine Arts.
Basic technology and properties of wood as applied to its use as an art medium. Wood identification, design of wood forms, and effect of moisture on the dimensional stability of wood. Design problems involving wood.
390. **Field Mensuration (3).** Lec. 1, Lab. 6. Summer. Pr., FY 310.
Application of the forest measurement principles to field conditions. Practical experience in forest inventory work on large properties.
391. **Forest Engineering (3).** Lec. 1, Lab. 6. Summer. Pr., CE 201.
Application of the principles of civil engineering to forest field conditions. Practical experience in road location, land surveying, and topographic surveying for recreational purposes.
396. **Forest Site Evaluation (2).** Lec. 1, Lab. 3. Spring. Pr., GL 102, FY 397, FY 417 and junior standing.
Theoretical and field training in the classification and evaluation of forest habitats and land for various uses. Overnight field trips are required.
397. **Forest Regeneration (3).** Lec. 1, Lab. 6. Summer. Pr., FY 207.
Field observation and evaluation of natural and artificial methods of regeneration of forest types, with emphasis on ecological factors. Extended field trips will be made.
398. **Forestry Tour (1).** Lab. 3. Summer.
A one-week tour to points of outstanding interest to foresters.
407. **Forest Management (5).** Lec. 5. Spring. Pr., FY 420, FY 438 and junior standing.
General principles applicable to the organization, administration and regulation of forest properties primarily for the production of crops of timber.
408. **Logging (3).** Lec. 2, Lab. 3. Fall. Pr., FY 204.
Logging methods and the factors affecting the costs in each phase of logging. Field practice given in the safe use of mechanical logging equipment.
413. **Microtechnique of Hard Materials (5).** Lec. 1, Lab. 12. Pr., FY 311 or permission of instructor and junior standing.
Preparation and sectioning of hard materials for microscopic study. Care and use of the sliding microtome and diamond saw, staining, counterstaining, and mounting of section.
414. **Regional Silviculture (3).** Lec. 3. Pr., FY 420 and junior standing.
The principal forest type groups, their site occurrence, growth, value, and current silvicultural problems and practices, of each of the forest regions of the United States.
415. **Range Management (2).** Lec. 2. Spring. Pr., FY 207 or BY 413, and junior standing.
Survey of range management as applied to forest properties.
417. **Photogrammetry (5).** Lec. 1, Lab. 12. Summer. Pr., FY 310 and junior standing.
Use of aerial photographs in Forestry. Particular emphasis is placed on specifications for forestry photographs, basic map control, planimetric mapping, form-line mapping, timber type mapping and timber volume estimation.
418. **Advanced Forest Management (3).** Lec. 1, Lab. 6. Pr., FY 407 and junior standing.
Review of steps and procedures in preparation of management plans; preparation of management plans for selected areas.
420. **Silviculture (5).** Lec. 3, Lab. 6. Fall. Pr., FY 207 or BY 413 and junior standing.
Methods of controlling establishment, composition, growth, and quality of forest stands. Overnight field trips, not to exceed three, will be required.
421. **Forest Research Methods (3).** Lec. 2, Lab. 3. Winter and Spring. Pr., FY 309 or MH 163 and junior standing.
Review of statistical and sampling methods. Experimental design and analysis of data.
425. **Wood Gluing and Lamination (5).** Lec. 3, Lab. 6. Winter. Coreq., FY 311; Pr., PS 205 and junior standing.
Types and characteristics of woodworking glues. The theory, design, and manufacture of laminates and other glued products. The student will be introduced to research techniques and procedures by pursuing a specific study that will culminate in a comprehensive report.

430. **Physical and Chemical Properties of Wood (5).** Lec. 3, Lab. 6. Pr., junior standing.
Physical and chemical properties of wood substances. Advanced wood-liquid relationships, thermal and electrical properties. Chemical processing of explosives, coatings, film and fiber products from wood.
431. **Mechanical Properties of Wood (5).** Lec. 3, Lab. 6. Spring. Pr., junior standing.
Mechanical properties of wood, factors affecting the strength of wood, principles used in the design of wood structures. Testing procedures.
432. **Seasoning and Preservation of Wood (5).** Lec. 5. Winter. Pr., FY 311 and junior standing.
Principles and practices of seasoning and impregnation of wood, study of wood destroying agencies.
433. **Seasoning and Preservation Laboratory (2).** Lab. 6. Spring. Pr., FY 432 and junior standing.
Required for wood technology majors only. Laboratory study of techniques and equipment used in the seasoning and impregnation of wood.
434. **Forest Policy and Law (3).** Lec. 3. Spring. Pr., junior standing.
Development of forest policy in the United States against the background of cultural heritages and economic situations. Forest Laws, National and State, as influenced by and as influencing policy.
435. **Forest Products Marketing (3).** Lec. 2, Lab. 3. Winter. Pr., FY 204, FY 205 and junior standing.
An introduction to the forest products available for sale from large forest properties, the marketing channels through which they move, their comparative prices and production costs, and their measurement.
436. **Forest Watershed Management (3).** Lec. 2, Lab. 3. Winter. Pr., GL 102 and FY 203, AY 304, or AY 305 and BY 413; junior standing.
A survey of forest hydrology as a specialized branch of forest ecology. The use of forests and forestry practices for the regulation of streamflow. An overnight field trip is required.
437. **Forest Economics I (3).** Fall. Pr., AS 202 or EC 200, FY 206 or FY 207, and junior standing.
Fundamentals of economics as applied to forestry. Supply, demand and price relationships; predictions for the future. Marginal analysis as applied to forestry enterprises. Bases and methods of forest valuation in the determination of stumpage, damages, alternatives and land. Taxes, their valuation and effect upon forest properties. Insurance and credit in forest ventures.
438. **Forest Economics II (3).** Winter. Pr., FY 437 and junior standing.
Input-output relationships in forest production. Computation of financial maturity of trees and stands. Competition for resources in the management of forest properties. Uses of land and evaluation of intangible values associated with land.
440. **Farm Forest Management I (3).** Lec-Dem. 4. Pr., graduate standing.
Field, demonstrations to be arranged. Methods of measuring forest products and computing volumes and growth of trees and stands applicable to forest practice in farm woodlots. Methods of thinning, stand improvements, and harvesting, applicable to woodlot management.
450. **Small Woodland Management (5).** Summer. For majors in Education or Agricultural Education, by consent of instructor, and junior standing.
The importance of small forest holdings in the national, regional, and state economies. An evaluation of trends in ownership patterns and their related problems. Characteristics used in recognition of forest stands comprising major forest types. Principles of forest management and their application.
460. **Wildland Recreation Philosophy and Policy (3).** Spring.
An examination of the philosophy and policy of wildland recreation. Laws and traditions at federal, state, and local levels of government as well as industrial and other landowners' outlooks and developments relative to wildland recreation will be discussed.
461. **Recreational Land Classification (3).** Lec. 1, Lab. 6. Summer. Pr., FY 460.
Land classification for various recreational uses will be reviewed and discussed from an economic viewpoint. Extended field trips will be required.
469. **Recreational Site Management (3).** Spring. Pr., FY 461, Coreq., FY 407.
Management of recreational sites so as to take into account all of the resources of the land as well as the human and economic forces influencing that management will be examined.
480. **Senior Thesis (5).** Pr., senior standing.
A problem in the student's area of interest. Will test ability of student to do thorough library research as well as any needed laboratory or field work. A comprehensive report, written in the style of a graduate thesis, is required.
490. **Seminar in Forestry (1).** Spring. Pr., senior standing.
Advanced study of current literature and recent developments, with written and verbal reports on selected problems. Required of all graduate students in forest management and wood technology and all seniors in the Honors Program.

495. **Forestry Problems (1-5 each).** Pr., junior standing, permission of instructor, and approval of department head. Maximum of 10 hours in all areas as credit toward the Bachelor of Science degree. Areas of study defined as in FY 691.

GRADUATE COURSES

601. **Wood Chemistry (5).** Lec. 2, Lab. 9. Pr., FY 430, CH 203.
Detailed study of the physical and chemical nature of cellulose and modified cellulose and their derivatives. Study of the lignocellulose complex. The chemical analysis of wood.
610. **Forest Tree Improvement (5).** Lec. 4, Lab. 3. Pr., ZY 300 or consent of instructor.
Principles of heredity as applied to forest trees and their management. Review of current knowledge in tree improvement. Principles of forest tree breeding. Study and evaluation of activities designed to produce genetically improved trees.
611. **Forest Soils (5).** Lec. 3, Lab. 6. Pr., AY 304 or AY 305.
Importance of morphological, physical and chemical properties of forest soils in relation to growth of trees. Classification of forest soils on the basis of productivity. Special emphasis on forest soils in the southern pine region.
613. **Forest Community Investigations (5).** Lec. 2, Lab. 8. Pr., GI 102, or AY 304 or AY 305; FY 207 or BY 413.
Methods of detecting, measuring, describing and analyzing forest communities and community types. Application to the study of forest ecosystems.
617. **Forest Inventory (5).** Lec. 4, Lab. 3. Pr., FY 417, FY 310.
Design and analysis of large scale timber volume and growth appraisals, continuous forest inventory and use of electronic computing equipment in forest inventory operations.
640. **Farm Forest Management II (3).** Lec. 4. Pr., FY 440 and graduate standing.
Organization of the farm woodlot for continuous forest production. Methods of balancing cut and drain, and plans for the efficient administration of the woodlot as a business.
691. **Directed Study (1-5).** All quarters. Directed Study limited to a maximum of 5 hours in any specified area and to a maximum of 15 hours in all areas as credit towards the Master of Science degree.
Areas of Directed Study: (A) Forest Management, (B) Forest Economics, (C) Forest Sampling, (D) Regression Analysis, (E) Linear Programming, (F) Forest Photogrammetry, (G) Forest Mensuration, (H) Forest Engineering, (I) Forest Soils, (J) Forest Ecology, (K) Forest Genetics, (L) Tree Physiology, (M) Wood Anatomy & Quality, (N) Uses of Wood & Derived Products, (O) Chemistry of Wood Glues, Finishes, & Impregnants, and (P) Timber Physics.
695. **Special Problems (3-8).** All quarters.
A special problem in forestry or wood utilization. Such a problem will be of lesser magnitude than a thesis but will test the student's ability to do thorough library research as well as any needed laboratory or field work, and to prepare a comprehensive report on his findings. The work may be spread over more than one quarter, but shall be limited to a total of eight quarter hours.
699. **Research and Thesis.** Credit to be arranged.
799. **Research and Dissertation.** Credit to be arranged.

Foundations of Education (FED)

Professors Willers, *Head*, Hollaway, and Punke

Associate Professors Greenshields and Phillips

Assistant Professors Hatcher, Kim, Lauderdale, Robison, Schuessler, and Walter

Instructors Bowman, Craver, Easley, Lewis, McCullers, and Schug

Undergraduate

213. **Human Growth and Development (5).** Lec. 4, Lab. 2. All quarters. Pr., sophomore standing. Required of all students completing the Teacher Education Program.
Analysis of the function of the teacher and the school in the direction, measurement, and evaluation of individual growth and development by using various sociological, philosophical, and psychological theories. Laboratory experiences provided.
214. **Psychological Foundations of Education (5).** Lec. 4, Lab. 2. All quarters. Pr., sophomore standing, FED 213 or equivalent. Required of all students completing the Teacher Education Program.
The psychological dimensions of the educational process. The processes, conditions, and evaluation of learning, and related methodologies of teaching. Laboratory experiences and evaluation of the Pre-teaching Field Experience. For description of the Pre-teaching Field Experience Program, see Professional Requirements, Sect. C under School of Education.

320. **Social Foundations of Education (5).** Lec. 4, Lab. 2. All quarters. Pr., junior standing, FED 214; SY 201 or equivalent and 5 additional hours of Social Science. Required of all students completing the Teacher Education Program. Analysis of the social roles of the school in American culture, the influence of the school and the teaching profession on other institutions, and the social forces and crucial issues which affect education. Laboratory experiences and evaluation of the Pre-teaching Field Experience. For description of the Pre-teaching Field Experience Program, see Professional Requirements, Sect. C under School of Education.
480. **Philosophical Foundations of Education (5).** All quarters. Pr., senior standing, FED 320 or equivalent, professional internship or approval of adviser(s). Required of all students completing the Teacher Education Program. The development of educational movements and ideas in Western culture which influence modern educational practices. Evaluation of laboratory experiences and the Professional Internship through philosophical analysis of educational concepts and problems.
490. **Evaluation in Education (3).** Lec. 2, Lab. 2. All quarters. Pr., senior standing. Analysis of methods, procedures, and evaluative instruments for determining teaching effectiveness and the attainment of educational goals. Examination of theories and methods of testing, measurement, self-evaluation, and pupil accounting. Techniques, uses and interpretation of educational statistics. Laboratory experiences in the public schools.

Advanced Undergraduate and Graduate

420. **Educational Sociology (5).** Pr., junior standing, FED 320 and SY 201 or equivalents. Analysis of the school as a social institution. Group interaction, formal and informal structure and organization, and the relationship of education to other social institutions.
434. **Personality Dynamics and Effective Behavior (5).** Pr., junior standing and ten hours of psychology. Analysis of adaptive and maladaptive behavior. Not open to students majoring in psychology.

Graduate

600. **Education in Modern Society (5).** Pr., graduate standing. (Not open to students with credit in ED 635.) Analysis and interpretation of the interaction of historical, philosophical and sociological considerations affecting education in modern society.
601. **Social Foundations of Education (5).** Pr., FED 600. Analysis of man as a social being, his social relationships and inventions, and value patterns. Direction and support of educational developments in relation to various socio-economic structures.
602. **Social Change and Educational Development (5).** Pr., FED 601. Major current theories of social change and their practical application in improving the school and directing social innovations which sustain educational improvements.
617. **Advanced Educational Psychology (5).** All Quarters. Pr., FED 213 and 214 or equivalents. (Not open to students with credit in FED 451.) In-depth analyses of the psychological bases of learning. Particular emphases are the development and modification of cognitive and affective behavior.
625. **Urbanization and Educational Development (5).** Pr., FED 600. Developments in the concentration of population, wealth, and cultural dissemination in urban areas. The changing character of this concentration, and its impact on educational agencies regarding different population groups and different areas of educational service.
630. **Education and Culturally Disadvantaged People in America (5).** Pr., FED 600. Areas and extent of cultural disadvantage and its relation to education. Shifting concentrations of disadvantage in relation to patterns of population growth and cultural development. Educational aims and procedures in preventing and remedying cultural disadvantage.
634. **History of Education (5).** Pr., FED 600. The emergence of education as a formal institution, tracing its historical development from early Greek times to the present and emphasizing the historical antecedents which have helped to shape the role and functions of education in Western culture.
636. **Philosophy of Education in America (5).** Pr., FED 600. Major American contributions to the philosophy of education and their influence on educational practice. Need for, and procedures in, reexamining concepts in the light of recent scientific and cultural developments.
637. **Development and Status of Educational Philosophy (5).** Pr., FED 600; FED 636 or consent of department chairman. Development of philosophy of education from the standpoint of its implications for educational practice. Several patterns of thought are considered including supernaturalism, idealism, realism, humanism, communism, existentialism, and experimentalism.
639. **Comparative Education (5).** Pr., FED 600; two quarters of graduate study or consent of department chairman. Comparison among the educational systems of leading foreign countries and the United States, giving attention to the historic origins of different systems and to their present sociological and philosophical significance.

- 645. Current Problems and Issues in the Foundations of Education (5).** Pr., teaching experience.
Interpretation of selected issues in the sociological, psychological, historical and philosophical foundations of education which affect the total educational enterprise and its relation to society.
- 646. Studies in Education (1-3).** Pr., one quarter of graduate study.
Study of a problem using research techniques to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)
- 647. Foundations in Curriculum and Teaching (5).**
Development of curriculum patterns and teaching materials reviewed in terms of recent investigations and experimentation; conflicting conceptions of the nature of the curriculum and the sociological, philosophical and psychological implications of these conflicts; methods of curricular reorganization in the elementary and secondary schools.
- 650. Seminar in Foundations of Education (5).** Pr., consent of the department chairman.
Independent study of social and philosophical issues and their impact on education. Examination of issues by utilizing social philosophies and the techniques of analysis from the social sciences.
- 661. Research and Experimentation in Education (5).**
Emphasis given to research methods, design of experiments, and evaluation; data sources, research planning, elements of scientific method and proposal writing. Current trends in educational research.
- 672. Statistical Methods in Education (5).**
The need and importance of applying statistical methods to the study of educational problems, statistical methods appropriate to education, and interpretation of meanings of statistical analyses.
- 673. Research and Experimental Design (5).** Pr., FED 672.
Relationship of design to validity; significance of variables, testing hypotheses, evaluation of research and research findings.
- 675. Advanced Statistical Methods in Education (5).** Pr., FED 672.
Analysis of variance and covariance; correlational analysis and linear regression. Simple and complex factorial designs applied to educational research.
- 676. Advanced Research and Experimental Design (5).** Pr., FED 675.
An extensive examination of the nature and character of experimental design in educational research including the development of appropriate analytical techniques.

Geology (GL)

Professor Carrington, *Head*
Associate Professor DeRatmiroff
Assistant Professor Cahoon
Instructor Taylor

- 101. Introductory Geology I (5).** Lec. 4, Lab. 2. All quarters.
The origin and classification of rock-forming and ore minerals. Sedimentary metamorphic, and igneous processes, and classification of rocks that result from such processes. Rock deformation and mountain building.
- 102. Introductory Geology II (5).** Lec. 4, Lab. 2. All quarters.
Geomorphology through study of weathering, mass movement, formation of soils, and the erosional, transportational, and depositional aspects of groundwater, streams, oceans, glaciers, and wind.
- 201. Geological Field Methods (2).** Lab. 5. Winter. Pr., GL 101 or 102.
The instruments and methods used in geological field mapping.
- 301. Mineralogy I (5).** Lec. 4, Lab. 2. Fall. Pr., CH 103 or equivalent.
Crystal chemistry and crystallography.
- 302. Mineralogy II (5).** Lec. 4, Lab. 2. Winter. Pr., GL 301.
Identification, description, and classification of representative minerals and mineraloids.
- 310. Geologic History of Life (5).** Lec. 4, Lab. 2. Fall. Pr., BI 101 or consent of instructor.
A survey of the major groups of plants and animals as they are found in the fossil record. Basic principles and techniques of paleontology will also be considered: fossilization, speciation, evolution, paleoecology, paleogeography.
- 311. Invertebrate Paleozoology (5).** Lec. 4, Lab. 2. Winter. Pr., GL 310 or BI 103 or consent of instructor.
Morphology, classification, and significance of selected genera representative of the diversity of fossil invertebrates, including microscopic fossils.
- 312. Paleobotany (5).** Lec. 4, Lab. 2. Spring. Pr., GL 310 or BI 102 or consent of instructor.
Morphology, anatomy, evolution, and stratigraphy of fossil plants, including microscopic fossils.

401. **Sedimentation-Sedimentary Petrology (5).** Lec. 4, Lab. 2. Fall. Pr., GL 302 or consent of instructor.
Principles involving transportation and deposition of marine and non-marine sediments, and detailed description and classification of rocks that result from such processes.
402. **Structural Geology-Metamorphic Petrology (5).** Lec. 4, Lab. 2. Winter. Pr., GL 302.
Principles of rock deformation, and detailed description and classification of geological structures and rocks that result from deformative forces.
403. **Igneous Geology and Petrology (5).** Lec. 4, Lab. 2. Spring. Pr., GL 302.
Principles of intrusive and extrusive igneous activity, and detailed description and classification of rocks that result from such processes.
411. **Stratigraphy (5).** Lec. 4, Lab. 2. Spring. Pr., GL 312, 401, 402, 403.
Descriptive geology pertaining to the discrimination, character, thickness, sequence, age, and correlation of rocks. Particular emphasis on formation, composition, sequence, and correlation of stratified rocks, and on the physical development and history of the Earth as recorded in the stratigraphic record.
421. **Economic Geology I (5).** Lec. 4, Lab. 2. Fall. Pr., GL 402, 403.
The origin and classification of mineral deposits formed by igneous and metamorphic activity. Introduction to methods of prospecting.
422. **Economic Geology II (5).** Lec. 4, Lab. 2. Spring. Pr., GL 401.
The origin and classification of mineral deposits formed by surficial processes. Introduction to methods of prospecting.
431. **Research Methods and Application (1-6).** All quarters. Pr., senior majoring in geology, or consent of departmental faculty upon receipt of acceptable proposal.
Actual research projects and participation in some phase of original research under supervision of a senior investigator. Credit evaluation determined by the departmental faculty on the basis of the formal presentation of the problem and the probable method(s) of investigation. May be taken more than one quarter for a maximum cumulative credit of six credit hours.

Health, Physical Education and Recreation (HPR)

Professors Fourier, *Head*, Francis, Land, Means, and Umbach
Associate Professors Fitzpatrick and Young
Assistant Professors Dragoin, Martincic, Moore,
Morgan, Puckett, Rosen, Turner, Waldrop, and Washington
Instructors Barrington, Bond, Bridges, Chapman,
Cherrellia, Ford, Lane, Martin, McCampbell, and Moore

The instructional program of the Department of Health, Physical Education and Recreation comprises (1) courses in health and physical education for students in the University liberal education program, (2) course for students majoring and minoring in health and physical education, and (3) courses for students in preparation for teaching.

University Physical Education Requirements

Three quarters of physical education are required by the University for graduation. Any deficiencies in physical education incurred at Auburn University or elsewhere must be cleared prior to graduation. Only one credit per quarter is permitted or transferable to meet the three-quarter requirement.

Health Classification. Each student is assigned a health classification of "A", "B", or "C" and is issued a health card which identifies courses for which he is eligible. The "A" classification is assigned to students who are free from health problems; the "B" classification is assigned to students who may be restricted from participating in certain phases of the program; the "C" classification is assigned to students who are restricted from participating in any vigorous physical activity. Students may request re-classification whenever changes in health status or physical condition occur.

Course Requirements. Students with an "A" health classification are required to take HPR 101, Foundations of Physical Education, during their first quarter of physical education. Those who do not have sufficient skill in swimming to assure their own safety in and around water are required to take HPR 102, Beginning Swimming (Department of Health, Physical Education, and Recreation administers a test to determine each student's swimming ability.) Students who take swimming choose one course from Group I or II listed below for their third quarter's work. Students who do not take a swimming course must select one course from Group I and one course from Group II in completing their three quarters of physical education.

Students with "B" or "C" classifications are required to take either HPR 101, Foundations of Physical Education, or HPR 100, Foundations of Physical Education for the Atypical as marked on their health cards. During subsequent quarters they are expected to meet the other requirements stated above as nearly as their medical restrictions will allow. Specific course selections should be made on the recommendations of the Department of Health, Physical Education and Recreation.

Credit. All courses carry one hour credit per quarter (maximum of six quarter hours allowed on degree). No student may receive credit for a course in which he has previously earned credit.

Students may not register for a beginning level course (Groups I and II) after having earned credit in the sport or dance area on an advanced level (Group III). Credit cannot be earned for a 200 and a 300 level course in the same sport.

Electives. Three quarter hours credit may be earned in addition to the three quarter hours required. Elective courses may be chosen from Groups I, II, and III.

100. Foundations of Physical Education for the Atypical (I).

Designed for the individual with anatomical and functional defects.

101. Foundations of Physical Education (I).

Understanding the relationship of human movement to body efficiency, aesthetics and health; self-appraisal; development of a personal plan for achieving and maintaining physical condition; selection of a personal program of developmental and recreational activities.

102. Beginning Swimming (I).

Knowledge and skill in aquatics which are developed to a level sufficient to support a recreational interest and to assure one's own safety and the safety of others in and around water.

103. Swimming for the Atypical (I).

Provides water therapy, an understanding of adaptive movements, and aquatic skills.

107. Sports and Dance in American Culture (I). (Atypical).

114. Recreational Sports for the Atypical (I).

Survey of recreational pursuits for students with physical limitations: billiards, bicycling, croquet, darts, hiking, horseshoes, net games, and shuffleboard.

115. Adapted Physical Education (I).

Concerned with the improvement and correction of physiological and anatomical remedial defects.

Group I (Vigorous)*

116. Weight Control (I).

Caloric intake-output, nutrition, and the development of desirable exercise and nutritional habits. Activities selected according to individual needs and limitations. Open to students with health classifications "A", "B", and "C".

125. Basketball (I).

126. Touch Football (I).

127. Soccer-Speedball (I).

130. Boxing (I).

131. Fencing (I).

132. Wrestling (I).

134. Judo (I).

135. Weight Training (I).

136. Track (I).

137. Handball (I).

140. Apparatus (I).

Understanding of gymnastics and skill in the use of different apparatus.

141. Trampoline (I).

142. Tumbling (I).

145. Contemporary Dance (I).

An understanding of dance as an art form.

146. Tap Dance (I).

147. Ballet (I).

Fundamentals and terminology of classical ballet.

*Vigorous activities having special value with respect to development and maintenance of physical condition.

Group II (Recreational Skills)**

- 150. Intermediate Swimming (1).
- 153. Springboard Diving (1). Lab. 3. Pr., classified as intermediate swimmer or above.
Instruction in the basic dives; front, back, inward, reverse, and twist.
- 155. Angling (1).
Skills in bait and fly casting. Selection and care of tackle.
- 156. Archery (1).
- 157. Badminton (1).
- 158. Bowling (1).
- 159. Golf (1).
- 162. Rifle Marksmanship (1).
Open to students in Air, Army and Navy ROTC.
- 163. Tennis (1).
- 165. Camping (1).
Understanding of American heritage in relation to the out-of-doors, camping trends, conservation, and the development of camping skills.
- 166. Family Recreation (1).
Leisure time activities suitable for the family.
- 168. Basic Equitation (1).
- 170. Folk Dance (1).
- 172. Social Dance (1).
Mixers, as well as ballroom dances: foxtrot, waltz, rhumba, tango, and other representative Latin dances.
- 180. Softball (1).
- 181. Volleyball (1).

Group III (Advanced — Elective)

- 250. Synchronized Swimming (1).
A creative approach to individual and group composition of water ballet stunts and stroke adaptations.
- 251. Life Saving (1).
Skills leading to certification in Red Cross Senior Life Saving.
- 255. Skin Diving (1) Lec. 1, Lab. 2. Pr., classified as advanced swimmer.
Underwater swimming. Includes selection and use of swim fins, mask, and snorkel. Underwater physiology and safety are emphasized.
- 259. Advanced Golf (1).
- 263. Advanced Tennis (1).
- 325. Varsity Basketball (1).
- 326. Varsity Football (1).
- 332. Varsity Wrestling (1).
- 336. Varsity Track (1).
- 337. Varsity Cross Country (1).
- 340. Competitive and Exhibitional Gymnastics (1).
- 359. Varsity Golf (1).
- 363. Varsity Tennis (1).
- 380. Varsity Baseball (1).
- 110. Health Science (3).
Basic understanding concerning sound health practices and protection. Physical, mental, and social aspects of personal and community health are considered.
- 111-112-113. Health Science (1-1-1).
(111) Concepts related to health and college life, nutrition, maintaining the body, and consumer health choices; (112) mental health, stimulants and depressants, family living, and chronic-degenerative diseases; (113) community health problems, communicable diseases, and safety education.

Courses for the Major and the Minor

- 106. Developmental Activities: Theory and Techniques (2). Lec. 1, Lab. 4.
Body mechanics, calisthenics, movement fundamentals, weight training.
- 133. Combatives: Theory and Techniques (2). Lec. 1, Lab. 4.
Boxing, fencing, and wrestling.

**Activities having special value as healthful, lifetime recreational pursuits.

167. **Individual and Dual Sports: Theory and Techniques (2).** Lec. 1, Lab. 4.
Archery, badminton, bowling, golf, and tennis.
190. **Apparatus and Tumbling: Theory and Techniques (2).** Lec. 1, Lab. 4.
Apparatus, stunts, tumbling, pyramids, and trampoline.
191. **Team Sports: Theory and Techniques (2).** Lec. 1, Lab. 4.
Basketball, field hockey, soccer, softball, speedball, and volleyball.
201. **Introduction to Physical Education (5).** Lec. 5. Fall, Winter, Spring.
Physical education from the earliest periods to the present. Emphasis is placed on the physical, biological and psychological principles of physical education.
202. **Basketball (Men) (3).** Lec. 2, Lab. 2. Fall.
The fundamental skill techniques of basketball—offense, defense, and strategy.
206. **Football (Men).** Lec. 2, Lab. 2. Winter.
The fundamentals of football and the different types of offense, defense, team strategy and generalship.
211. **Sensorimotor Activities (3).** Lec. 2, Lab. 2.
Designed to develop understandings and skills concerning the broad concept of sensorimotor experiences for children, ages 4-8.
212. **Elementary School Activities (3).** Lec. 2, Lab. 2.
Physical education activities suitable for the first six grades including teaching devices.
213. **Dance for Children (3).** Lec. 2, Lab. 2.
Includes all forms of dance suitable for elementary school age children with emphasis on creative dance activities which afford a progression in dance skills.
214. **Kinesiology (5).** Lec. 5. Pr., VM 220-221, PS 204.
221. **Aquatics: Theory and Techniques (2).** Lec. 1, Lab. 4.
Water sports, scuba diving, operation and maintenance of pools.
278. **Social and Folk Dance: Theory and Techniques (2).** Lec. 1, Lab. 4.
Basic skills, fundamental knowledge and appreciation of social and folk dance.
280. **Basketball Officiating (1).** Lab. 3.
Discussions, practices, and leadership experiences.
284. **Softball Officiating (1).** Lab. 3.
Discussions, practices, and leadership experiences.
288. **Volleyball Officiating (1).** Lab. 3.
Discussions, practices, and leadership experiences.
295. **School and Community Health (3).**
Analysis of health practices in the school and community. Emphasis is given to the scope, purposes, philosophy, and principles pertaining to health in the school and community.
301. **Recreation Leadership (5).** Lec. 5. Winter, Summer.
302. **Alcohol, Narcotics, and Tobacco (3).**
Investigation of stimulants and depressants with special emphasis on alcohol, narcotics, and tobacco. The effects of these substances on the human body and the social, economic, and community problems associated with their use.
303. **Baseball (3).** Lec. 2, Lab. 2.
Offensive and defensive strategy, pitching, catching, infielding, outfielding, batting and baserunning.
304. **Track and Field (3).** Lec. 2, Lab. 2.
Fundamental skills and techniques of track and field athletics. The organizing and conducting of track meets.
311. **Conduct of Dance for High School and Recreation Programs (3).** Lec. 2, Lab. 3. Pr., completion of PE 278 or equivalent.
Providing experiences in analyzing, selecting and presenting dance for high school and recreation programs.
312. **Theory and Conduct of Team Sports for Women (3).** Lec. 2, Lab. 3.
Lead-up games, skill techniques, rules, and skill tests; practice and application of the skills and principles of team sports.
313. **Theory and Conduct of Individual and Dual Sports (3).** Lec. 2, Lab. 3.
Skills, techniques, rules, and skill tests; practice and application of the skills and principles of individual and dual sports.
314. **Theory and Conduct of Gymnastics (3).** Lec. 2, Lab. 3.
Skills and techniques for teaching apparatus, stunts, and tumbling.
316. **Tests and Measurements (3).**
Analysis, administration, and interpretation of tests and measurements in health, physical education and recreation.
318. **Principles of Recreation (5).** Lec. 5.
The significance and meaning of leisure; theories of play; the recreation movement in the United States. Principles of program planning and development at state and local levels of government, in schools and in industry.

319. Outdoor Recreation (5). Lec. 5.

Outdoor recreation in the United States. Includes principles of planning for recreational use of open land, forests, farms and water.

351. Water Safety (3). Lec. 1, Lab. 4. Pr., current Red Cross Sr. Life Saving Certificate.

American Red Cross Advanced Swimmer and Water Safety Instructor courses leading to certification.

370. Dance Survey (3). Lec. 2, Lab. 2.

Explores styles and types of dance through the ages in relation to music, drama, architecture and art.

372. Dance Production and Rhythmic Demonstrations (3). Lec. 2, Lab. 2.

Apprenticeship in producing dance programs, exhibitions of physical activity and festivals.

395. Health Instruction (3).

Designed to prepare prospective elementary and secondary school teachers and health personnel for health education responsibilities. Organization and planning for instruction, teaching procedures, content, materials, and resources are examined and evaluated.

401. Organization and Administration (5). Lec. 5. Fall and Spring. Pr., senior standing.

Administration of intramural and physical education activities; also the construction and care of the physical education plant and departmental organization.

403. First Aid (3). Lec. 2, Lab. 2.**404. Athletic Injuries (3).**

Athletic injuries as to care, prevention, and correction.

405. Physiology of Muscular Activity (3). Pr., VM 220-221.

Inter-relationships of muscular activity and physiological variations.

416. Adaptive Physical Education (3). Lec. 3. Spring. Pr., PE 214, VM 220 and 221.

Review of anatomy, physiology, and psychology pertaining to special programs of physical education for the temporarily and permanently handicapped, with laboratory practice in posture training and remedial gymnastics.

Advanced Undergraduate and Graduate**409. Advanced Health Science (5). Pr., consent of instructor and junior standing.**

Principles and concepts basic to the improvement of individual and group living and the role of the home, school, and community in the development of sound physical and mental health.

417. Physical Education for the Mentally Retarded (5). Pr., Junior Standing.

The motor characteristics of the mentally retarded and the design of special programs of physical education; involves working with mentally retarded children.

419. Current Problems in Health Education (5). Pr., consent of instructor and junior standing.

A critical analysis of the problems, issues, and trends in health education.

Graduate**619. Scientific Principles Applied to Physical Education and Athletics (5). Pr., undergraduate major or minor in health and physical education.**

Specific application of physics, physiology, and psychology to the development of physical skills and related topics including reaction time, motivation, maturation, illusions, morale, and problems of group social living in physical education and athletics.

626. Physical Fitness, a Critical Analysis (5). Pr., VM 220-221 or departmental approval.

Critical analysis of physical fitness objective of physical education through inquiry into current research in medicine, physiology of muscular activity, and physical fitness appraisal and guidance.

669. Physiology of Exercise (5). Pr., undergraduate major or minor in health and physical education.

Experiences in the physiology of muscular activity and application of these to physical education and athletic situations.

699. Thesis Research. (Credit to be arranged.) May be taken more than one quarter.**Professional Courses****Undergraduate****104. Orientation (1).**

Helps transfers from other curricula to understand teacher education and teaching as a profession.

105. Orientation (1).

Helps freshmen in planning their professional careers.

108. Introduction to Laboratory Experiences (1).

Required of all students completing the Teacher Education Program. Orientation to the total laboratory experiences program in the School of Education with specific attention to the orientation and initiation of the pre-teaching field experiences program.

414. **Teaching in Health and Physical Education in Elementary and Secondary Schools (3).** Lec. 2, Lab. 2. Pr., FED 320 or equivalent.
(For description, see Interdepartmental Education.) (A) Health Education, (B) Health, Physical Education, & Recreation.
423. **Program in Health and Physical Education in Elementary and Secondary Schools (3).** Lec. 2, Lab. 2. Pr., FED 320 or equivalent.
(For description, see Interdepartmental Education.) (A) Health Education, (B) Health, Physical Education, & Recreation.

Undergraduate students with a major in health, physical education and recreation will pursue a minor selected from some other teaching area in the secondary school program or in one of the areas included in the twelve-grade program. (For appropriate course in Teaching or Program, see SED, IED, and VED.)

425. **Professional Internship in Health and Physical Education in Elementary and Secondary Schools (15).** Pr., Sr. standing, Admission to Teacher Education three quarters prior to Internship, minimum of two appropriate Teaching and Program Courses.
(For description, see Professional Internship in School of Education.) (A) Health Education, (B) Health, Physical Education, & Recreation.
429. **Problems of Health Education and Health Observation of School Children (5).** Pr., junior standing.
Helps the teacher with the details of health observation, aids in health guidance of individual pupils, acquaints the teacher with the health services available through local and state departments.

Graduate

The following courses are organized and taught on a twelve-grade basis:

646. **Studies in Education (1-3).** Pr., one quarter of Graduate study.
A problem using research techniques to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)

Each of these courses, HPR 651 and 652, applies to the following areas of the elementary and secondary school programs: (A) Health Education, and (B) Physical Education. Credit may not be earned in both A and B of the same course.

651. **Research Studies (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Review, analysis and interpretation of available research in health education or physical education with emphasis on designing new research to meet changing needs of the school.
652. **Curriculum and Teaching in Elementary and Secondary Schools (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Teaching practices and reappraisal of selecting experiences and content for curriculum improvement in health education or physical education.
653. **Organization of Program in Health and Physical Education in Elementary and Secondary Schools (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Advanced course. Program, organization, and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
654. **Evaluation of Program in Health and Physical Education in Elementary and Secondary Schools (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of health and physical education with the total school program and with other educational programs of the community.

History (HY)

Professors McMillan, Head, Belser, Harrison, Maehl, Partin, and Rea
Associate Research Professor Newton

Associate Professors Jones, Owsley, Pidhainy, Reagan, and Williamson
Assistant Professors Bond, Ciccarelli, Cronenberg, Eaves, Henson, and Storey
Instructors Fabel, Hall, M. Newton

101. **World History (3).**
A survey of world civilization from prehistory to 1350.

102. **World History (3).**
A survey of world civilization from 1350-1789.
103. **World History (3).**
A survey of world civilization from 1789 to the present.
201. **A History of the United States to 1865 (5).**
202. **A History of the United States Since 1865 (5).**
300. **Introduction to Latin American History (5). Pr., sophomore standing.**
A survey of Latin American civilizations to the present with emphasis on the Colonial Period.
301. **Introduction to Far Eastern History (5). Pr., sophomore standing.**
A brief survey of the major cultural and institutional developments of the area.
306. **Contemporary Affairs (3).**
A survey of recent events and their effect on the modern world.
311. **Medieval History (5). Pr., sophomore standing.**
Europe from the fall of the Roman Empire to the Age of Discovery.
315. **American Negro History (5). Pr., sophomore standing.**
Racial and cultural origins of the Negro, including African background, the slave trade, the development of the labor system, emancipation, and the recent transition of the Negro from a predominately agrarian economy to that of an industrial urban complex.
322. **The United States in World Affairs (3). General elective. Pr., sophomore standing.**
The influence which the United States has exerted in international affairs.
350. **History of Political Parties (5). Pr., sophomore standing.**
Emphasis is placed on the origin and growth of American political parties from the Federalist era to the present.
371. **History of the West (5). Pr., sophomore standing.**
The development of the West and of its influence on American history.
381. **History of Alabama (5). Pr., sophomore standing.**
A brief history of Alabama from the beginning to the present.
400. **American Colonial History (5). Pr., junior standing.**
The political, economic, and social history of the colonies from their founding to the end of the French and Indian War, 1763.
401. **The American Revolution and the Confederation, 1763-1789 (5). Pr., junior standing.**
The new British Colonial policy, the War for Independence, and the first federal constitution and the movement to replace it.
402. **Federalist and Jeffersonian America, 1789-1815 (5). Pr., junior standing.**
The establishment of the new federal government, the origins of American political parties, and the role of the United States in the French Revolutionary and Napoleonic Wars.
403. **The American System and Jacksonian Democracy, 1815-1850 (5). Pr., junior standing.**
Nationalism, sectionalism, egalitarianism, and expansion.
404. **The Civil War (5). Pr., junior standing.**
The sectional controversy from the Compromise of 1850 to the beginning of hostilities in 1861, and the military, economic, social, and political aspects of the war.
405. **The Reconstruction Period (5). Pr., junior standing.**
An analysis of the social, economic, and political aspects of the years 1865-1877.
406. **Recent United States History, 1877-1914 (5). Pr., junior standing.**
The political, economic, diplomatic, social, and cultural development of the United States.
407. **Recent United States History, 1914-1932 (5). Pr., junior standing.**
Political, economic, and social development of the United States.
408. **Modern America, 1932 to the Present (5). Pr., junior standing.**
Political, economic, and social development of the United States.
409. **United States Diplomacy to 1890 (5). Pr., junior standing.**
Chief events in our relationships with foreign powers from the Revolutionary War to 1890.
410. **United States Diplomacy Since 1890 (5). Pr., junior standing.**
The emergence of the United States from a hemispheric power to a total involvement in world affairs.
411. **Social and Intellectual History of the United States to 1876 (5). Pr., junior standing.**
Selected areas of American thought are studied in their social context, ranging from Puritanism to the impact of Darwinism on the American mind.
412. **Social and Intellectual History of the United States Since 1876 (5). Pr., junior standing.**
An examination of major intellectual movements in American society from social Darwinism to Progressivism and its legacy.

413. **The South to 1865 (5). Pr., junior standing.**
The origins and growth of distinctive social, economic, cultural, and ideological patterns in the South with emphasis on period 1815-1860.
414. **The South Since 1865 (5). Pr., junior standing.**
Major trends in the South since the Civil War with emphasis on social, economic, cultural, and ideological development.
426. **The Reformation Era, 1500-1600 (5). Pr., junior standing.**
Europe during the Protestant and Catholic Reformations, overseas discovery, and political developments in the age of Charles V, Henry VIII, Elizabeth, and Philip II.
427. **The Seventeenth Century (5). Pr., junior standing.**
Emphasis on the Thirty Years' War, Scientific Revolution, overseas colonization, and European political developments in the age of Louis XIV.
428. **The Age of Reason, 1715-1789 (5). Pr., junior standing.**
A history of Europe from the Age of Absolutism to the collapse of the Old Regime.
429. **The French Revolution, 1789-1799 (5). Pr., junior standing.**
Background, causes and course of the Revolution in France.
430. **History of Europe from Bismarck through the First World War (5). Pr., junior standing.**
Emphasis upon Central Europe, Germany, and Italy since unification.
431. **History of Europe Since the Treaty of Versailles (5). Pr., junior standing. Offered alternate years with HY 430.**
Emphasis on the rise to totalitarianism, the Second World War, and the post-war period.
432. **Medieval German History (5). Pr., junior standing.**
433. **Modern German History (5). Pr., junior standing.**
435. **Napoleonic Europe, 1799-1815 (5). Pr., junior standing.**
The rise and fall of the Consulate and the Empire in France and French hegemony in Europe.
436. **Modern France (5). Pr., junior standing.**
From the Ancien Regime to the present.
437. **European Diplomatic History, 1815-1919 (5). Pr., junior standing.**
International relations of the Great Powers from Vienna to Versailles.
443. **History of Europe, 1815-1850. Pr., junior standing.**
450. **History of China (5). Pr., junior standing and HY 301.**
A more intensive study of China emphasizing its dominant role in the Far East.
451. **Japan and Southeast Asia (5). Pr., junior standing and HY 301.**
A more intensive study of the cultures of Eastern Asia emphasizing the impact of the West in the recent period.
452. **The Caribbean Area (5). Pr., junior standing and HY 300.**
An analysis of the Caribbean as to its geographic, cultural, and strategic importance from 1492 to the present.
453. **Modern South America (5). Pr., junior standing and HY 300.**
Colonial background and the cultural development of nineteenth and twentieth century South America.
454. **History of Mexico (5). Pr., junior standing and HY 300.**
An analysis of the unique cultural development of Mexico.
455. **Modern Brazil (5). Pr., HY 300 and junior standing.**
Portuguese America from Independence to the present.
456. **History of Modern Russia, 1453-1917 (5). Pr., junior standing.**
A detailed history of the Russian nation in the modern era to the dissolution of the Empire.
457. **History of the Soviet Union, 1917-1967 (5). Pr., junior standing.**
The territories under the Bolshevik regime from the proclamation of the Bolshevik state to the present time.
460. **Great Leaders of History (5). Pr., junior standing.**
Some world leaders and their relationship to the great movements of history.
471. **History of Medieval England (5). Pr., junior standing.**
A survey of English origins and institutions to the seventeenth century.
472. **History of Modern England (5). Pr., junior standing.**
A survey of British history since the seventeenth century.

GRADUATE COURSES

600. **Seminar in American History, 1763-1800 (5).**
601. **Seminar in American History, 1800-1850 (5).**
602. **Seminar in American History, 1850-1876 (5).**
603. **Seminar in American History, 1876-1914 (5).**
604. **Seminar in American History, 1914- (5).**

- 605. United States Far Eastern Diplomacy (5).
- 606. United States Latin American Diplomacy (5).
- 607. United States Atlantic Diplomacy (5).
- 608. Seminar in American Social and Intellectual History (5).
- 609. Seminar in the Old South (5).
- 610. Seminar in the New South (5).
- 611. Seminar in State and Local History (5).
- 629. Historical Methods (5).
- 634. History of Revolutions (5).
- 635. Seminar in European History (5).
- 636. Colonial Latin America (5).
- 637. Latin America in the National Period, Revolutionary Movements, and National Developments (5).
- 638. Seminar in the French Revolutionary and Napoleonic Era (5).
- 639. Historiography and Theory of History (5).
- 640. Seminar in Tudor and Stuart England (5).
- 641. Seminar in Eighteenth Century England (5).
- 650. Cultural and Institutional Foundations of World History (5).
- 699. Research and Thesis (5).

READING COURSES

The following reading courses are offered in order to give the graduate student an opportunity for study in specialized areas and are rigorously supervised by the professors responsible for the fields. Registration is by permission of the department and the major professor.

- 620. Directed Reading in American History to 1876 (5).
- 621. Directed Reading in American History Since 1876 (5).
- 622. Directed Reading in American Diplomacy (5).
- 623. Directed Reading in American Social and Intellectual History (5).
- 624. Directed Reading in Latin American History (5).
- 625. Directed Reading in Far Eastern History (5).
- 626. Directed Reading in English History (5).
- 627. Directed Reading in European History (5).

Horticulture (HF)

Professors Perkins, *Head*, Amling, and Orr
Associate Professors Chambliss, Harris, and Norton
Assistant Professors Moore, Rymal, and Sanderson
Instructor Martin

Landscape and Ornamental Horticulture

- 101. Introduction to Horticulture (1). Lec. 1.
An orientation course for freshman introducing all fields in Horticulture.
- 221. Landscape Gardening (5). Lec. 3, Lec-Dem. 4.
Principles of landscape gardening applied to the development of small home grounds and school grounds. The lecture-demonstration periods are devoted to the study of the identification and use of ornamental plants, landscape drawings, and the propagation and maintenance of ornamental plants.
- 222. Trees (5). Lec. 3, Lab. 4.
Identification, culture and use of ornamental trees in landscape plantings.
- 223. Evergreen Shrubs and Vines (5). Lec. 3, Lab. 4.
Identification, culture, and use of broadleaf and narrowleaf evergreens in landscape plantings.
- 224. Plant Propagation (5). Lec. 3, Lab. 4.
Basic principles and practices involved in the propagation of horticultural plants.
- 225. Flower Arranging (3). Lec. 2, Lab. 2. General elective.
Principles and practices of flower arranging for the home.

321. **Deciduous Shrubs and Vines (5).** Lec. 3, Lab. 4.
Identification, culture and use of deciduous shrubs and small trees in landscape plantings.
323. **Greenhouse Construction and Management (5).** Lec. 3, Lab. 4.
Principles and practices of construction and utilizing greenhouses for various purposes such as plant propagation, crop production, and research.
325. **Landscape Planning of Home Grounds (5).** Lab. 15. Pr., HF 221.
Planning of large and small home grounds.
326. **Landscape Planning of Public Grounds (5).** Lab. 15. Pr., HF 221.
Planning of public areas and grounds of public buildings, including general layout, planting and detail treatment of special areas.
327. **Landscape Engineering (3).** Lec. 1, Lab. 6. Summer. Pr., FY 201 or permission of instructor.
Emphasis on the appreciation of forests for esthetic values as well as for production of various forest products. An evaluation of forest areas for recreational purposes. Consideration of campsite requirements, access and circulation as well as other phases of meeting such need.
421. **Care and Maintenance of Ornamental Plants (5).** Lec. 3, Lab. 4. Pr., BY 306, 309 and junior standing.
Principles and practices of the care and maintenance of trees and shrubs, including pruning, tree surgery, transplanting, and fertilization.
422. **Floricultural Crop Production (5).** Lec. 3, Lab. 4. Pr., HF 323 and junior standing.
Floricultural crop production under management in greenhouse and outdoor conditions.
423. **Nursery Management (5).** Lec. 3, Lab. 4. Pr., HF 224, BY 306, AY 304 and junior standing.
Principles and practices of the management of a commercial ornamental nursery.
424. **Planting Design (5).** Lec. 3, Lab. 4. Pr., HF 222, 223, 321 and junior standing.
Principles and practices of the combination and use of ornamental plants in landscape plantings.
425. **Flower Shop Management (5).** Lec. 3, Lab. 4. Pr., HF 225, 422, permission of instructor.
Principles and practices of flower shop management and floral designing.
- 426-27-28. **Minor Problems (3-5 each).** Lec. 1, Lab. 8. Pr., junior standing and permission of instructor.
Selected problems in either vegetable production, pomology, food technology, or landscape and ornamental horticulture, on which independent library, field, laboratory, or greenhouse investigations are made, under supervision of instructors. Graduate credit limited to one quarter.
429. **Advanced Plant Propagation (5).** Lec. 3, Lab. 4. Pr., HF 224, BY 306, and junior standing.
Commercial propagation of Horticultural plants with emphasis on the physiological and anatomical principles.
430. **Marketing Horticultural Speciality Products (5).** Lec. 3, Lab. 4. Pr., HF 422, HF 423.
Channels and methods of distribution of floricultural and nursery products.
431. **Advanced Landscape Gardening (5).** Lec. 3, Lab. 4. Pr., BI 101, HF 221, graduate standing.
Principles and practices applying to the use of ornamental plant material in landscaping. (Selected portions of this course may be offered as a 3 hour credit in the Master of Agriculture program.)
432. **Controlled Plant Growth (5).** Lec. 3, Lab. 4. Pr., AY 304, BY 306, CH 207, CH 208, HF 323, and junior standing.
Controlling and directing growth of plants by manipulation of the environment and by the use of chemicals.

General Horticulture

101. **Introduction to Horticulture (1).** Lec. 1.
An orientation course for freshmen introducing all fields in Horticulture.
201. **Orchard Management (5).** Lec. 3, Lab. 4. Each quarter.
Propagating, planting, pruning, cultivating, fertilizing, spraying, thinning, harvesting, grading, storing and marketing the most valuable fruits and nuts grown in the South.
308. **Vegetable Crops (5).** Lec. 3, Lab. 4. Each quarter.
Principles and special practices used in production of vegetable crops.
340. **Industrial Food Preservation Technology (5).** Lec. 3, Lab. 4. Fall, odd years. Pr., junior standing or consent of instructor.
Principles of food preservation as applied to industry. Processes considered include refrigeration, pasteurization, canning, freezing, drying, concentration, fermentation, pickling, salting, irradiation, and the use of food additives.

341. **Industrial Food Equipment and Processes I (5).** Lec. 3, Lab. 4. Winter, even years. Pr., junior standing or consent of instructor.
Material and structural requirements of food equipment, and basic principles and processes such as heat exchange, refrigeration, evaporation, distillation, homogenization, extraction, filtration, centrifugation, fluid flow and instrumentation.
342. **Industrial Food Equipment and Processes II (5).** Lec. 3, Lab. 4. Spring, even years. Pr., junior standing or consent of instructor.
Continuation of subject matter of HF 341 with emphasis on unit operations and processes.
343. **Food Analysis and Quality Control (5).** Lec. 3, Lab. 4. Fall, even years. Pr., CH 208.
Sensory, chemical, and instrumental food analysis and its application to quality control and evaluation of grades and standards.
401. **Commercial Vegetable Crops (3).** Lec. 2, Lab. 2. Winter. Pr., HF 308 and junior standing.
An advanced course in the production of the major commercial vegetable crops.
402. **Storage, Packaging and Marketing of Vegetable Crops (3).** Lec. 2, Lab. 2. Spring. Pr., junior standing.
Physiological, pathological, and horticultural principles in storing, packaging, and marketing of commercial vegetable crops.
404. **Fruit Growing (5).** Lec. 4, Lab. 2. Winter. Pr., HF 201 and junior standing.
Production and marketing of commercial tree fruits grown in the South.
405. **Small Fruits (5).** Lec. 4, Lab. 2. Spring. Pr., HF 201 and junior standing.
Principles and practices involved in the production of strawberries, grapes, blueberries, and brambles.
406. **Nut Culture (5).** Lec. 4, Lab. 2. Fall and Winter. Pr., HF 201 and junior standing.
Production and marketing of pecans, walnuts, chestnuts, tung, and filberts.
408. **Commercial Vegetable Crops (3).** Lec-Lab. 4. Spring or Summer. Pr., HF 308 and graduate standing.
Application of research information to the commercial production and handling of the principal vegetable crops. (Credit for both HF 408 and 401 may not be used to meet requirements for the Master's degree.)
410. **Recent Advances in Small Fruits (3).** Spring and Summer. Pr., HF 201 and graduate standing.
Scientific advances in small fruits and their application to small fruit culture in Alabama. (Credit for both HF 410 and HF 405 may not be used to meet requirements for the Master's degree.)
- 426-27-28. **Minor Problems (3-5 each).** Lec. 1, Lab. 8. Pr., junior standing and permission of instructor.
Selected problems in either vegetable production, pomology, food technology, or landscape and ornamental horticulture, on which independent library, field, laboratory, or greenhouse investigations are made, under supervision of instructors. Graduate credit limited to one quarter.
440. **Food Engineering (5).** Lec. 3, Lab. 4. Winter, even years. Pr., junior standing.
Application of physics and engineering principles to food processing operation, instrumentation in food processing, process and equipment development.

GRADUATE COURSES

601. **Experimental Methods in Horticulture (5).** Lec. 3, Lab. 6. Any quarter.
Purposes of research, discovery, and progress as related to the scientific method; research programs, horticultural programs, selecting projects, reviewing literature, preparing project outlines, conducting experiments, recording data, analyzing data, and publication of results.
602. **Seminar (1).** Fall, Winter, and Spring. May be taken more than once for a maximum of three hours credit.
603. **Special Problems in Horticulture (3-5).** Credit to be arranged. All quarters. Pr., graduate standing.
Selected problems in vegetable production, pomology, food technology, or ornamental horticulture.
604. **Plant Growth and Development (5).** Lec. 4, Lab. 2. Any quarter. Pr., HF 432 or BY 306 and consent of instructor.
Morphological and physiological changes in horticulture plants as induced by growth regulators and their theoretical implications in the improvement of horticultural crops production.
605. **Nutritional Requirements of Horticultural Plants (5).** Lec. 4, Lab. 2.
Nutritional requirements of horticulture crops and factors affecting these requirements.
606. **Physiology of Horticultural Products Following Harvest (5).** Lec. 3, Lab. 4. Winter, even years. Pr., BY 306 and graduate standing.
Physiological changes occurring in fresh fruits, vegetables, and other horticultural plant products after harvest. Methods of studying these changes and factors influencing them.

607. **Breeding of Horticultural Crops (5).** Lec. 3, Lab. 4. Summer, even years. Pr., ZY 300 and graduate standing.
An application of genetic principles in the propagation and maintenance of fruit, vegetable, and ornamental crop varieties. The genetic basis of some production problems, and special breeding methods applicable to horticultural crops.
699. **Research and Thesis.** Credit to be arranged. May be taken more than one quarter.

Industrial Engineering (IE)

Professors Brooks, Head, Cobb, and Denholm
Associate Professors Hool, Layfield, Morgan, and White
Assistant Professors Boyd, Herring, Irwin, Maghsoodloo, Miller,
Smith, and Trucks

201. **Industrial Administration (3).** Pr., sophomore standing.
Survey of the concepts, techniques, and functions of engineering management. (Not open to Industrial Engineering students.)
202. **Industrial Processes (3).** Pr., EG 106, IL 100, PS 220, CH 103.
The general processes by means of which producer and consumer goods are manufactured.
204. **Computer Programming (3).** Pr., MH 162.
Digital computer programming with emphasis on mathematical problems, using FORTRAN programming language. (Not open to students with credit in IE 205.)
205. **Computer Programming and Introduction to Information-Decision Systems (3).** Lec. 2, Lab. 3. Pr., MH 265 or concurrently.
Digital computer programming with emphasis on mathematical and engineering problems using FORTRAN programming language. Included are introductory design considerations for information-decision systems involving computers as a principle data processing device. (Intended for engineering students and not open to students with credit in IE 204.)
211. **Engineering Statistics I (3).** Pr., MH 264.
Basic probability, random variables and distribution functions.
301. **Electronic Data Processing and Computer Programming (5).** Lec. 4, Lab. 3. Pr., MH 161.
Functions and uses of electronic data processing equipment, and an introduction to digital computer programming with emphasis on administration problems, using COBOL programming language.
302. **Production Control Techniques (3).** Pr., IE 201, or EC 300.
Planning, scheduling, routing, and dispatching in manufacturing operations. Mechanisms for production control. (Not open to Industrial Engineering students.)
305. **Information-Decision Systems (3).** Lec. 2, Lab. 3. Pr., IE 205.
Study of interrelated components of complex management information-decision systems. Design considerations for systems involving computers as a principle data processing device.
310. **Motion and Time Study (5).** Lec. 4, Lab. 3. Pr., EC 274.
Principles and practices of methods engineering and time study. (Not open to students with credit in IE 318 or IE 419.)
312. **Engineering Statistics II (3).** Pr., IE 211.
Descriptive statistics, sampling concepts, sums of random variables and an introduction to hypothesis testing.
313. **Engineering Statistics III (3).** Pr., IE 312.
Estimation, goodness of fit tests, regression-correlation methods and introduction to analysis of variance.
314. **Operational Analysis I (3).** Pr., IE 202, IE 312, IE 325.
Nature of operational systems analysis; decision theory; formulation of objective; identification of alternatives; concept of systems analysis (system description); model building; concept of optimization; introduction to model solution methods.
315. **Operational Analysis II (3).** Pr., IE 205, IE 314, MH 266.
Introduction to mathematical programming methods with emphasis on linear models. Graphical, vector and simplex methods of solution are presented. Transportation and allocation models included.
316. **Electronic Data Processing Systems Design (4).** Lec. 3, Lab. 3. Pr., IE 204, IE 301 or IE 305.
Application of computers and associated data processing equipment to business and administrative information and decision systems design.
318. **Work Design I (3).** Lec. 2, Lab. 3. Pr., IE 314.
Study and practice in applying principles which govern motion economy; work space organization; selection of materials, jigs, fixtures, and equipment, and application of methods time measurement for the determination of the most economical method of manufacture. (Not open to students with credit in IE 310.)
320. **Engineering Economy (5).** Pr., MH 161 and junior standing.
Practical engineering studies for the economic selection of structures, equipment, processes and methods. (Not open to students with credit in IE 325 or IE 326.)

325. **Engineering Economic Analysis I (3).** Pr., IE 205, MH 265.
The development of principles required in engineering economy studies and other decision-making oriented courses. (Not open to students with credit in IE 320.)
326. **Engineering Economic Analysis II (3).** Pr., IE 314 and junior standing.
Engineering studies for the economic selection of structures, equipment, processes and methods. (Not open to students with credit in IE 320.)
363. **Man-Machine Systems I (3).** Pr., PG 321, IE 313.
Human engineering and human beings' relation to machine systems; human characteristics in view of performance of functions where machines are involved, and design for man-machine systems.
410. **Probability and Statistics (6).** Pr., MH 264.
Basic probability, random variables, moments, discrete and continuous distributions, sampling distributions, regression analysis and testing hypothesis. (Not open to Industrial Engineering undergraduate students.)
411. **Operational Research (6).** Pr., MH 266, IE 410 (or concurrently).
Model construction, solving and testing models, simulation, production processes, inventory, queueing theory, linear programming and dynamic programming. (Not open to Industrial Engineering undergraduate students.)
414. **Engineering Statistics IV (3).** Lec. 2, Lab. 3. Pr., IE 313.
Emphasis on quality control in manufacturing by means of statistical methods.
416. **Operational Analysis III (3).** Pr., IE 305, IE 313, IE 314.
Simulation procedures for solving complex systems analysis problems. Emphasis on random processes, model building, and construction of computer simulation models.
417. **Operational Analysis IV (3).** Pr., IE 315, IE 416.
Game theory; queueing theory; non-deterministic inventory models; replacement models; sequencing and scheduling models. Application to operational systems analysis.
419. **Work Design II (3).** Lec. 2, Lab. 3. Pr., IE 318, IE 363.
Principles governing the establishment of standard data in the various forms required for methods time measurement, wage incentive organizations, budgetary planning and standard cost; and the use of time measuring equipment in problems of standard data determination. (Not open to students with credit in IE 310.)
420. **Materials Handling (3).** Pr., IE 419.
Materials handling equipment, methods, and systems.
424. **Production Control Functions (3).** Pr., IE 326, IE 419.
Functions of production control; forecasting; production planning; inventory analysis; scheduling; dispatching and progress control. Critical path planning methods.
426. **Industrial Budget Control (3).** Lec. 2, Lab. 3. Pr., IE 305.
Industrial control through budgets and the inter-relationships between organizations, management and budgets.
427. **Operations and Facilities Design I (3).** Lec. 2, Lab. 3. Pr., IE 326.
Design principles and concepts of complex systems. (Should be taken the quarter immediately prior to the taking of IE 428.)
428. **Operations and Facilities Design II (3).** Lab. 9. Pr., IE 417, IE 424, IE 427.
The design of industrial, institutional, governmental and service operations and facilities. (Should be taken during student's final quarter.)
429. **Operational Control System Design (3).** Pr., IE 414, IE 417, IE 424, IE 426.
The design of operational planning and control systems. Integration of individual system functions. Concept of total system optimization.
430. **Contracts and Specifications (3).** Pr., senior standing.
Contract documents; specification writing; professional relations. (Not open to Industrial Engineering students.)
432. **Plant Maintenance (3).** Pr., IE 201.
Principles of organizing and controlling maintenance operations in industrial plants. (Not open to Industrial Engineering students.)
434. **Sales Engineering (3).** Pr., IE 201, junior standing.
Application of appropriate principles and techniques to selling industrial products when a background knowledge of production is required. (Not open to Industrial Engineering students.)
436. **Plant Location (3).** Pr., IE 315, IE 326, IE 417.
Factors and techniques pertinent to the economic location of industrial plants.
438. **Safety Engineering (3).** Pr., IE 201, junior standing.
Principles, practices, organizations and procedures for industrial accident prevention and plant protection. (Not open to Industrial Engineering students.)
- 490-1-2. **Industrial Engineering Problems (1-5).** Pr., permission of instructor and department head approval.
Individual student endeavor under staff supervision involving special problems of an advanced nature in Industrial Engineering.

Advanced Undergraduate and Graduate Courses

440. **Sampling and Survey Techniques (3).** Pr., IE 313 and junior standing.
Theory and application of statistical sampling and survey methods, with emphasis on methods optimization.

441. **Applied Industrial Engineering Mathematics (3).** Pr., MH 265 and junior standing.
Formulation and solution of differential and difference equations. Solution techniques will include analytical theory, Laplace and Z transforms and computer techniques. Introduction to state variables, matrix algebra and analysis.
442. **Advanced Linear Programming (3).** Pr., IE 315 and junior standing.
Continuation of IE 315 with emphasis on theory. Revised simplex, dual simplex, parametric programming, decomposition, and applied problems.
443. **Inventory Control (3).** Pr., IE 414, IE 417, IE 424 and junior standing.
Application of quantitative methods to the control of industrial inventories.
455. **Advanced Computer Programming (3).** Pr., IE 205 or consent of instructor and junior standing.
Formal definition and presentation of several numeric and nonnumeric problems using two or more programming languages other than FORTRAN and COBOL.
458. **Reliability Engineering (3).** Pr., IE 414, IE 417, and junior standing.
Reliability, maintenance, and replacement, with emphasis on quantitatively descriptive methods to be used for problem solving.
464. **Man-Machine Systems II (3).** Pr., IE 363 and junior standing.
A study of the philosophy and techniques of man-machine systems design. Emphasis is placed on proper integration of man into production systems.
470. **Project Management (3).** Pr., IE 417, or permission of instructor and junior standing.
Project management and development with primary emphasis on use of operations research methods and cost analysis. Includes a study of the application of CPM and PERT to project management.
471. **Continuous Process Control and Dynamics (3).** Pr., IE 441 and junior standing.
Continuous process dynamics and block diagram formulation. Conventional continuous process control and introduction to advanced control topics.
472. **Engineering of Organization and Management (3).** Pr., IE 426 and senior standing.
Organizational theory and concepts; the interaction between the individual and the organization.
480. **Automation (5).** Pr., junior standing and consent of instructor.
History, development, and state of automation in business. Business data processing and the resulting implications in management practices and research. (Not for science and mathematics students.)

GRADUATE LEVEL COURSES

616. **Industrial Dynamics (3).** Pr., IE 416 or permission of instructor.
Industrial dynamics based on a systems approach to industrial and related problems, with emphasis on decision-making.
617. **Advanced Simulation Problems (3).** Pr., IE 416 or permission of instructor.
Journal readings of applications simulation and development of procedure to solve large scale, realistic simulation problems.
622. **Markov Chains (3).** Pr., IE 417.
Finite and continuous Markov Chains, Poisson and Wiener processes, applications will be discussed.
623. **Time Series (3).** Pr., IE 417.
Stationary stochastic processes, time series analysis with emphasis on spectral density functions and applications will be discussed.
624. **Inventory and Production Control Systems (3).** Pr., IE 429, IE 443.
Advanced topics in production control and inventory theory. The relationships between production and inventory will be discussed.
630. **Advanced Statistical Methods for Engineers I (3).** Pr., IE 312.
Elaboration of basic statistical methods for engineers, with emphasis on a more theoretical study of multiple linear regression and the optimization of multiple linear regression procedures.
631. **Advanced Statistical Methods for Engineers II (3).** Pr., IE 630.
Extension of IE 630, with primary emphasis on analysis of variance methods. Includes a theoretical study of analysis of variance methods, mathematical derivation of mean squares, multiple comparison tests, and the Bennett and Franklin algorithm.
632. **Advanced Statistical Methods for Engineers III (3).** Pr., IE 631.
Introduction to the philosophy and methods of statistical design optimization, with emphasis on optimum multiple linear regression designs, optimum analysis of variance designs, and an introduction to response surface analysis.
633. **Dynamic Programming (3).** Pr., IE 417.
Theory of dynamic programming, a study of some general dynamic programming methods and a case study of application.
634. **Non-Linear Programming (3).** Pr., IE 442.
This course covers Quadratic Programming, Separable Programming, Gradient Methods, and Integer Programming.

- 640. **Non-Parametric Statistics (3). Pr., IE 313.**
Several non-parametric and distribution-free methods with emphasis on engineering applications.
- 664. **Management Information Decision Systems (3). Pr., permission of instructor.**
Analysis of organizations for information requirements, information flow, data storage and usage and total information systems.
- 665. **Advanced Topics in Human Engineering (3). Pr., IE 464.**
Human Information processing with particular emphasis on human decision behavior.
- 670. **Advanced Computation Methods (3). Pr., permission of the instructor.**
Study of advanced computer languages, pattern recognition, and hybrid computation. This course is designed to keep the graduate student abreast of current ideas in this rapidly expanding field.
- 671. **Discrete Process Control and Dynamics (3). Pr., IE 471.**
Sampled-data control systems and computer control topics. Representation of discrete industrial processes.
- 672. **Functional Optimization Theory (3). Pr., IE 417.**
Introduction to functional optimization theory including min-max theory, calculus of variations, pontryagin, maximum principle and applied functional analysis.
- 690. **Industrial Engineering Project. Credit to be arranged.**
May be taken more than one quarter for a maximum of 9 hours.
- 699. **Thesis (0-7).**

Industrial Laboratories (IL)

To be combined with Engineering Graphics to form the Department of Technical Services, July 1, 1970.

Professor Haynes, *Head*
Assistant Professors Goolsby, McMurtry, and Wingard
Instructor Connor

Courses listed below are available as electives to all students with the necessary prerequisites.

- 100. **Introduction to Manufacturing Processes (2). Lab. 6.**
Laboratory oriented studies in economic production principles related to metal and plastic product manufacturing.
- 102. **Welding Science and Application (1). Lab. 3.**
Basic principles and application of welding and cutting processes in the fabrication of metals.
- 103. **Machine Tool Laboratory (1). Lab. 3.**
Introduction to metal removal processes; basic machines of production.
- 104. **Sheet Metal Design and Fabrications (1). Lab. 3.**
Methods and equipment used in design, production and fabricating of sheet metal products.
- 105. **Foundry Technology (1). Lab. 3.**
Basic fundamentals involved in casting products of ferrous and non-ferrous metals.
- 308. **Gages and Measurements (5). Lec. 4, Lab. 2. Pr., IL 103.**
The science of measurement as applied to production and inspection of industrial products.

Manufacturing Processes

Courses designed to acquaint the student with basic manufacturing processes including analysis of machines, tools, material product design, and dimensional control.

- 301. **Manufacturing Processes—Casting area (3). Lec. 3. Pr., any one shop course.**
Analysis of materials, methods, and design of cast products.
- 302. **Manufacturing Processes—Machining area (3). Lec. 3. Pr., IL 103.**
Principles of machining metal products.
- 303. **Manufacturing Processes—Shaping, Forming, and Fabricating area (3). Lec. 3. Pr., IL 102.**
Materials and methods involved in the production of metal products by shaping, forming, and welding processes.
- 304. **Materials in Design Engineering (3). Lec. 3.**
Acquaints the student with methods of material selection for product development.
- 310. **Dimensional Control (4). Lec. 3, Lab. 2. Pr., IL 103.**
Fundamentals of Measurement Science with Laboratory Exercises in Dimensional Control.
- 405. **Problems in Welding Engineering (5). Lec. 3, Lab. 4. Pr., IL 102.**
Advanced phases and techniques of welding and allied processes. Students in design, weldability of metals, inspection practice, and selection of equipment.

406. **Problems in Machining (5).** Lec. 3, Lab. 4. Pr., IL 103.
Advanced phases of metal machining with emphasis on production machines and accessories.
450. **Engineering Metrology (1-5).** Pr., junior standing and departmental approval.
Studies in design, construction and use of precision measuring equipment and gages.

Courses designed chiefly for the preparation of teachers in Industrial Arts subjects and related fields.

101. **Woodworking (1).** Lab. 3.
Introduction to machines, tools, and materials used in working with wood and plastic.
307. **General Metals (5).** Lec. 3, Lab. 4. Pr., consent of instructor.
Design, construction and finishing art metal projects.
402. **Advanced Woodworking (5).** Lec. 3, Lab. 4. Pr., IL 101.
Studies in design, construction, and finishing fine objects of wood.
403. **General Shops (5).** Lec. 5. Pr., senior standing.
Problems of organization of unit shops into integrated whole for effective use in high school teaching.
415. **Shop Work for Elementary Teachers (5).** Lec. 2, Lab. 6. Pr., junior standing.
Methods, materials, and techniques involved in conducting activity programs in schools and recreational centers.
416. **Materials of Industrial Arts (5).** Lec. 5. Pr., senior standing.
History and use of various materials used in industry.
417. **Organization of Shop Courses (5).** Lec. 5. Pr., senior standing.
Organization and administration of the Industrial Arts program in the public schools.
418. **Industrial Arts Design (5).** Pr., senior standing.
Fundamentals of design as applied to Industrial Arts projects.
419. **Utilization of Machine Tools in Research and Development (1).** Lab. 3.
Instruction in the use of machine tools for machining, fabricating and finishing components and assemblies of working models for developmental projects.

GRADUATE COURSES

- 611-12. **Technical Problems in Industrial Arts (5-5).** Pr., graduate standing.
Advanced study of technology and method in selected areas of Industrial Arts.

Interdepartmental Education (IED)

Included in this section are program areas and course listings designed and taught on the interdepartmental basis. The subheadings reflect the nature and scope of the offerings.

Curriculum and Teaching — Elementary-Secondary

Teaching, Program, and Student Teaching

Students in either secondary or elementary education pursuing a curriculum leading to certification for teaching in a particular subject-matter field in elementary and secondary schools will take the Teaching and the Program courses in the teaching field in which certification is expected. These courses may be scheduled and taught as separate courses, related courses, or as a unified program.

414. **Teaching in Elementary and Secondary Schools (3).** Lec. 2, Lab. 2. Pr., FED 320 or equivalent.
(A) Art, (C) Theatre, (J) Music, (M) Speech, (N) Speech Correction.
423. **Program in Elementary and Secondary Schools (3).** Lec. 2, Lab. 2. Pr., FED 320 or equivalent.
(A) Art, (C) Theatre, (J) Music, (M) Speech, (N) Speech Correction.
425. **Professional Internship in Elementary and Secondary Schools (15).** Pr., Sr. standing, Admission to Teacher Education three quarters prior to Internship, minimum of two appropriate Teaching and Program Courses.
(For description, see Professional Internship under School of Education.) (A) Art, (C) Theatre, (J) Music, (M) Speech, (N) Speech Correction.

Graduate

Courses 651, 652, 653, or 654, apply to the following areas of the school program:
(A) Art, (C) Theatre, (E) Gifted, (I) Mental Retardation, (J) Music, (M) Speech, and (N) Speech Correction.

648. **Advanced Study of Curriculum and Teaching (5).** Pr., FED 647 or consent of departmental chairman.
Major issues, frontier developments, and trends in the improvement of curriculum and teaching in elementary and secondary schools.
651. **Research Studies in Education in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the school.
652. **Curriculum and Teaching in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Teaching practices and reappraisal of selecting experiences and content for curriculum improvement.
653. **Organization of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Advanced course. Program, organization, and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
654. **Evaluation of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization with the total school program and with other educational programs of the community.
658. **Seminar and Independent Study in Curriculum and Teaching (5).** Pr., FED 647 and IED 648.
Research and experimentation in elementary and secondary schools in the development of education programs and the improvement of teaching and learning. Appraisal of significant curriculum research, exploration of areas of needed research in curriculum and instruction, and study of fundamental criteria and methods for solving curriculum problems.

Special Education (Mental Retardation)

425. **Professional Internship in Special Education (5, 10, 15).** Pr., Sr. Standing, admission to Teacher Education three quarters prior to Internship, appropriate professional courses.
(For description, see Professional Internship in School of Education Section). (1) Mental Retardation.
479. **Methods and Materials for Teaching the Mentally Retarded (5).** Pr., IED 476, IED 478, FED 320.

Advanced Undergraduate and Graduate

476. **The Exceptional Child (5).** Pr., junior standing.
The etiology, incidence, diagnosis and philosophy of teaching the exceptional child. Special attention is given to the child who is physically or mentally handicapped and to the child who is mentally superior.
478. **Nature of Mental Retardation (5).** Pr., junior standing and IED 476.
Characteristics and nature of mental retardation. Etiology, identification, and classification of retardation are investigated. Social, psychological, physical, and educational implications of mental retardation are considered.
480. **Education of Children With Special Learning Disabilities (5).** Pr., junior standing and admission to Teacher Education.
Existing theories and instructional programs for children with special learning disabilities. Administrative arrangements, classroom management, individual educational evaluation and programming are emphasized.

Graduate

643. **Education of the Physically Handicapped (5).** Pr., adequate courses in physiology and psychology.
Characteristics of major physical disabilities; the psychology of the physically handicapped; the educational objectives with curriculum adaptations; and related aspects of a total program for the physically handicapped.
650. **Teaching the Mentally Retarded (5).** Pr., IED 476, IED 478 and IED 479.
Observation and participation under supervision in educational programs for the mentally retarded. Lectures and discussions will implement the student's work in the classroom. Students will develop and evaluate plans and programs for the special class. (For teachers pursuing a program of education for mentally retarded children.)
670. **Educational Procedures for Children With Behavior Disorders (5).** Pr., Graduate standing and consent of instructor.
Analysis of current provisions for children with emotional conflicts, with emphasis on educational procedures and implications for learning disabilities.

671. **Current Research on the Behavioral Disorders of Children (5). Pr., Graduate Standing and consent of instructor.**
Examination and interpretation of research. Emphasis on educational implications of emotional conflict, classroom guidance and control.

School Library Educational Media and Audio-Visual Personnel

Advanced Undergraduate and Graduate

472. **Media for Children (4). Pr., junior standing.**
Examination and evaluation of printed and other types of materials in view of their relevance to the needs and interests of various age and grade levels of elementary school children. Study of selection aids, principles, and criteria for selecting materials.
482. **Organization and Administration of Media Centers (5). Pr., junior standing.**
Basic organization of books, non-book materials, and services for effective use in media centers. Administering the budget, selection and purchase of materials, preparation of materials for use, circulation of materials, inventory, care and repair of materials, and instruction in the use of media are considered.
484. **Classification and Cataloging of Media (5). Pr., junior standing.**
Principles and procedures of classifying and cataloging books and other printed materials, filmstrips, recordings, and community resources. The vertical file, the Dewey decimal system of classification, Wilson and Library of Congress printed cards, and subject headings are studied.
485. **Learning Resources (5). Pr., junior standing.**
Examination, evaluation, sources, and production of learning resources; attention to contributions of films, filmstrips, slides, exhibits, realia kits, games, charts, recordings, radio, television, and programmed materials to learning.
486. **Media for Young Adults (5). Pr., junior standing.**
Study and evaluation of books and other types of materials in relation to the interests, needs, and abilities of young people of high school age. Attention is given to selection aids, principles and criteria of selection, reading guidance, and significant investigations concerning young people's reading.
487. **Practicum in Media Services (1-10) (May be repeated for credit not to exceed 10 hours). Pr., junior standing, 10 hours in media.**
Provides students with supervised experience in various work settings with emphasis on the application of concepts, principles, and skills acquired in previous course work.
489. **Cybernetic Principles of Learning Systems (5). Pr., junior standing, EM 485.**
The organization of mediated instruction into learning systems designs utilizing feedback control and modification. Includes implications for instructional strategies formed to function in the continuous progress school with special emphasis on the media center.

GRADUATE COURSES

608. **Technology in Education (5). Pr., 10 hours including 485 or its equivalent.**
Theory, problems, procedures, and standards in the utilization of technology.
609. **Modes of Mediated Instruction (5). Pr., EM 608 or consent of department.**
Development and integration of media into learning prescriptions. Emphasis is on the assigning of media in a total systems approach to curriculum building.
610. **Reference Materials and Services (5). Pr., EM 608.**
Study and evaluation of basic reference sources for learning resources centers. Elementary research methods of locating information and the role of various types of reference books as resource material in curricular units are considered.
611. **Principles of Media Services (5). Pr., EM 608.**
Place and function of media services in the American educational system. Historical development of learning resources centers; media services to teachers and pupils as an integral part of the school program; standards and administrative policies are included.
612. **Problems in the administration of Media Services (5). Pr., EM 608.**
Current problems relating to an effective program of media services.
613. **Media Services in the School and Community (5). Pr., EM 608.**
Community relations; historical background, current trends; problems and programs of service; relation to public and rural library extension service; selection of materials on the basis of community and curriculum needs; book lists and exhibits.
650. **Seminar in Educational Media (1-10). (May be repeated for credit not to exceed 10 hours). Pr., departmental approval.**
Special problems formulated around students area of specialization designed to engage students in an intensive study and analysis of problems identified.
651. **Research in Educational Media (5). Pr., 36 hours in Media and professional education.**
Analysis and review of research with an emphasis on the individual's research needs.
654. **Evaluation of Media Programs (2-5). Pr., departmental approval.**
An intensive study of factors contributing to effective organizational configurations.

Higher Education

Graduate

The courses described below along with AED 618 and AED 697 are designed especially for advanced students who are interested in positions in colleges, universities, and other post secondary-school institutions.

645. **Problems of Teaching the Marginally Prepared College Student (5). Pr., IED 665 or IED 666 or permission of instructor.**
Socioeconomic and cultural backgrounds as they affect learning styles of the marginally prepared student. Develop methods of appropriate teaching strategies as a means of improving the self-concept of these students.
663. **The American College and University (5).**
Philosophy and function, the university and social change, the community college, academic freedom, student-faculty-community relationships; international flow of educational ideas, government cultural programs, higher education and the state.
665. **The Community College (5).**
The rise and development of the community or junior college in American education. Includes organization, curriculum construction, staffing, and instructional procedures.
666. **Undergraduate Instruction in Higher Education (5). Pr., IED 663 or IED 665 or permission of instructor.**
The development and selection of appropriate curricular materials and effective teaching strategies. Evaluation of instruction and learning effectiveness in undergraduate programs of higher education.

The above courses, along with AED 618, AED 697, CED 653 and CED 654 constitute a core for the development of programs of study in higher education. Other offerings, in both academic and professional fields, are available for the completion of advanced programs. These include administration and supervision; foundations of education; psychology; student personnel; vocational and technical education; and professional and academic preparation for teaching in agricultural sciences, business administration, economics and sociology, English, health and physical education, history, home economics, mathematics, music, philosophy, physical and biological sciences, and speech.

Journalism (JM)

Professor Burnett

Assistant Professor Logue

English 101-102 or 103-104 are prerequisite for all courses in journalism.

221. **Beginning Newswriting (5).**
Introduction to newswriting, newspaper style, and mechanical practice, supplemented by work on the college newspaper.
223. **Reporting (5). Pr., JM 221.**
The technical aspects of reporting and newsgathering methods, supplemented by work on the college newspaper.
224. **Copyreading and Editing (5). Pr., JM 221.**
Methods of editing copy, writing headlines, basic make-up and proof reading.
315. **Agricultural Journalism (3).**
Designed for students in agriculture and home economics. Introduces practices of news coverage and writing, with major emphasis on specialized fields of study.
322. **Feature Writing (5). Pr., JM 221 or consent of the instructor.**
Gathering material for the writing of "human interest" and feature articles for newspapers and magazines, with consideration given to the marketing of manuscripts.
323. **The Community Newspaper (5). Pr., JM 221.**
Methods, problems, and policies involved in editing the community newspaper, as differing from the metropolitan daily.
421. **Photo-Journalism (5).**
Uses and processes of photography in the newspaper and magazine field. Operation of press cameras and the technique of developing, printing, and enlarging of pictures is provided.
- 422-423. **Journalism Workshop (3-3). All quarters. Pr., 15 hours of journalism, including JM 221 and 223.**
A two-quarter course giving practical experience in preparation of newspaper, radio, television, and magazine copy through supervised work with University communication media.
425. **Journalism Internship (6). All quarters. Pr., JM 221, 223, 224, and consent of instructor.**
A full-time internship of at least ten weeks with an approved publication, serving as a regular staff member under the direction of the editor.

465. The History and Principles of Journalism (5).

The development of the American Press, the principles and ideals of modern journalism, and the law of the press and radio.

GRADUATE COURSES**605. Agricultural Newswriting (3). Lec. 4. Pr., 20 hours of journalism or consent of instructor.**

Methods and problems of writing agricultural and home economics news, feature articles, and columns for publication. Special attention is given to improving effectiveness of communication.

Laboratory Technology (LT)

Assistant Professor Wheatley
Special Lecturer Schultz

101. Orientation (1). Fall and Winter quarters.

Aims, objectives, and requirements for careers in Medical and Laboratory Technology.

301. Hematology (5). Lec. 3, Lab. 6.

Study, procedures, and examinations of the blood, as recommended by the American Society of Clinical Pathologists.

305. Serology (5). Lec. 2, Lab. 6. Pr., VM 204.

Theory and techniques of laboratory tests based on the antigen-antibody reaction.

401. Advanced Hematology (5). Lec. 3, Lab. 6. Pr., LT 301.

Advanced study of blood cells and blood dyscrasias.

402. Seminar in Laboratory Technology (3). Pr., LT 301.

The student reports from the literature on recent advances in the field of laboratory technology.

405. Advanced Serology (5). Lec. 2, Lab. 6. Pr., LT 305.

Theory and techniques of the serological study of human blood.

422. Hospital Laboratory Practice (5). Lab. 15. Pr., LT 301.

Practice applications of the principles, procedures, and techniques encountered in hospital laboratories.

Library (LY)**101. Use of the Library (1).**

Lectures and assignments designed to develop skill in the use of the card catalog, and in the use of indexes and bibliographies. Taught by library staff members. Note: School Library Science courses are listed in the Interdepartmental Education heading.

Management (MN)

Professor Pickle

Associate Professors Henry, Head, Alexander, Allen, Lamar, Myles, and Snow

Assistant Professors Bond, Bressler, Brown, Goodwin, F. O. Hale, Horn,

Little, and Myers

Instructors Holley, Smith, and M. Street

Management**207. Electron Data Processing Principles (5). Lec. 3, Lab. 3. Pr., MH 161, ACF 211 (concurrently).**

Functions and uses of computers and related equipment emphasizing business application using an appropriate programming language.

310. Principles of Management (5). Pr., junior standing

Management functions and the application of management principles in organizations.

341. Business Law (5). Pr., EC 200, or AS 202.

Introduction to law, torts, contracts, agency and personal property.

342. Business Law (5). Pr., MN 341.

Legal principles concerning real property, sales, negotiable instruments, partnerships, and corporations.

346. Human Relations in Management (5). Pr., MN 310.

The principles of human relations as applied to business.

380. Industrial Management (5). Pr., junior standing and MN 310.

Principles and practices of modern scientific management as applied in the actual control and operation of industrial enterprises.

440. **Organization Theory (5). Pr., MN 346.**
Organization theory and principles in the management of business operations.
442. **Personnel Management (5). Pr., MN 310 or IE 201, junior standing.**
Management of labor, dealing with selection, training, placement, turnover, payment policies, employee representation, etc.
443. **Problems in Personnel and Industrial Relations Management (5). Pr., MN 442 and EC 445.**
This course emphasizes the study of contemporary issues and problems concerning the employee-employer relationship.
447. **Job Evaluation (3). Pr., MN 442 or EC 445, junior standing or consent of instructor.**
Wage and salary policy and administration with emphasis on the rationalization of wage and salary structures.
448. **Incentive Methods (3). Pr., MN 447, junior standing or consent of instructor.**
Methods and associated problems of providing incentives for workers and management personnel in industry and business.
449. **Advanced Personnel Management (5). Pr., MN 442 or PG 461, and junior standing.**
The solution of selected subjects or problems which confront personnel managers and related supervisory personnel.
455. **Government and Business (5). Pr., junior standing and EC 202.**
The regulation and control of business by government with emphasis upon the legislation dealing with combinations, public utilities, transportation, and economic development.
480. **Business Policies and Administration (5). Pr., junior standing and completion of core course of School of Business.**
The formulation and application of policies and programs pertaining to personnel, production, finance, procurement and sales in the business enterprise.
481. **Managerial Analysis (5). Pr., EC 475.**
Application of quantitative management techniques to the operation of the business firm.
482. **Management Information Systems (5). Pr., MN 310 and IE 301 or equivalent.**
Analysis and application of information flow in the business firm.

GRADUATE COURSES

605. **Human Relations In Business Organization (5). Pr., graduate standing and consent of instructor.**
Advanced study of human relations in individual and group interactions within the environment of business organizations. Emphasis on research literature in the field.
606. **Management Problems (5). Pr., MN 480 or permission of instructor.**
Basic administrative problems in business and industry. Managerial controls as applied to administrative and operative functions.
607. **Managerial Economics (5). Pr., EC 202, graduate standing or consent of instructor.**
Decision theory and criteria for decision-making concerning output, pricing, capital budgeting, scale of operations, investment and inventory control. Attention is also given to concepts of profits, production and cost functions, competition and equilibrium for the firm and the industry.
649. **Management Science (5). Pr., EC 475 or equivalent and graduate standing.**
The study and application of management science theory to business operations.
650. **Seminar (1-10). Pr., graduate standing or consent of instructor.**
For those students engaged in intensive study and analysis of management problems.
690. **Special problems (1-5). Pr., graduate standing.**
Variable content in the management area.
696. **Readings in Production and Personnel Management (1-10). Pr., graduate standing.**
General management theories, practices, and functions in industry and business. Also, covers the role of personnel management and human relations.
699. **Research and Thesis. Credit to be arranged.**

Office Administration

200. **Typewriting I (3). Lab. 5.**
Mastery of keyboard; techniques of machine operation; basic typewritten applications. For students with no previous training in typewriting. (Students with high school typewriting are not eligible for this course.)
201. **Typewriting II (3). Lab. 5. Pr., MN 200 with grade of C or one year of high school typewriting.**
Emphasis on business letters and forms; tabulation; reports.
202. **Typewriting III (3). Lab. 5. Pr., MN 201 with grade of C.**
Advanced typewritten communications with special problems and arrangement. (Students with two years of high school typewriting consult with OA staff about placement.)

203. Typewriting IV (2). Lab. 3.

Statistical typewriting; composition at the typewriter; executive office projects.

210. Shorthand I (5). Pr., MN 200 or equivalent.

Principles of Gregg shorthand, DJS. Rapid reading of shorthand; introduction of dictation techniques. For student with no previous training in shorthand. Students with one year of high school shorthand begin with second course.

211. Shorthand II (5). Pr., MN 210 with grade of C or equivalent.

Continuation of Shorthand I; dictation and development of pretranscription skills. Students with two years of high school shorthand begin with third course.

212. Shorthand III (5). Pr., MN 211 with grade of C.

Continuation of Shorthand II with emphasis on dictation speed and development of pretranscription skills.

300. Transcription I (5). Lec. 5, Lab. 5. Pr., MN 212 with grade of C or equivalent.

Development of transcribing skills progressing from transcription of printed shorthand to mailable transcription of unfamiliar material dictated at progressively higher rates of speed. Continuation of shorthand speed building 100 to 120 wam.

301. Transcription II (5). Lec. 5, Lab. 5. Pr., MN 300 with grade of C.

Terminal course. Emphasis on high quality transcripts evaluated according to transcription rate and speed of dictation. Shorthand speed 120 to 140 wam.

305. Records Management (3). Pr., junior standing.

Basic procedures of filing, records storage and control. Practice in record keeping.

400. Office Machines (5). Lec. 5, Lab. 5. Pr., junior standing or consent of instructor and ability to type at reasonable speed.

Designed to give a working knowledge of various machines found in modern offices. Basic training in use of dictating and transcribing, duplication, adding, calculating, and posting machines.

402. Office Apprenticeship (5). Lab. 10. Pr., MN 301, MN 403 or MN 404, and junior standing.

Practical secretarial experience. Student spends two hours each day working as intern in an office to which assigned for actual office experience.

403. Secretarial Procedure I (5). Pr., MN 300 and junior standing.

Analysis of the secretarial profession stressing importance of personal factors, development of decision-making ability, study of specialized duties including those of public relations.

404. Secretarial Procedure II (5). Pr., MN 300 and junior standing.

Continuation of Secretarial Procedure I with study of important areas of preparation for the prospective administrative assistant, including preparation of reports using basic knowledge of data processing and statistics, financial and legal duties, and duties of supervision. Case studies.

405. Administrative Management (5). Pr., MN 310 or MN 400 or consent of instructor, junior standing.

Administrative organization, systems design, data collection and processing methods, communications and records management, office physical facilities, office performance standards and control, motivation of office personnel.

Marketing and Transportation (MT)

Professor Horton, *Head*

Associate Professors Henley and Adams

Instructors Baird, Harris, Miller, and Watkins

331. Principles of Marketing (5). Pr., EC 202.

A general but critical survey of the field of marketing covering marketing channels, functions, methods and institutions.

332. Credits and Collections (5). Pr., EC 200, junior standing.

The nature and functions of credit, credit investments, credit information, mercantile and installment credit, credit department, organization and management, collection methods, credit insurance, etc.

333. Salesmanship (3). Pr., MT 331, junior standing.

The principles and problems in personal selling covering the various steps involved in the selling process. Consideration is also given to the economics of selling and to material useful to salesmen but outside the field of selling techniques.

432. Advertising (3). Pr., MT 331, junior standing.

The principles and practices involved in advertising. Analysis of the need for advertising. Preliminary product and market analyses, budget considerations, technical preparation and testing, planning campaigns, media selection, and coordination of the entire program.

433. Retail Store Management (5). Pr., MT 331, junior standing.

Principles and practices involved in the scientific operation of the retail store. Store location, layout, buying, pricing, and merchandise control.

434. Purchasing (5). Pr., MT 331, junior standing.

Objectives, control, and the direction of industrial purchasing.

435. **Marketing Problems (5). Pr., MT 331, junior standing.**
Marketing problems, policies, costs, channels of distribution, terminal markets, trade barriers and legislation.
436. **Marketing Research Methods (5). Pr., MT 331, junior standing.**
Methods of scientific research in the field of marketing and their application to the solution of marketing problems.
437. **Sales Management (5). Pr., MT 331, junior standing.**
Principles and practices of sound organization and administration of sales organization. Includes consideration of: sales department organization, selecting, training, compensating, and supervising salesmen, sales planning, setting up sales territories and quotas and other problems.
438. **Retail Merchandising (5). Pr., MT 433 and junior standing.**
The planning, policies, procedures, and techniques necessary to insure a balanced assortment of merchandise consistent with customer demand and profitable operation.
472. **Economics of Transportation (5). Pr., EC 200, junior standing.**
The development of systems of transportation. Rates are studied as they affect agriculture, commerce and industry. Attention is also given to government regulation of transportation agencies.
473. **Traffic Management (5). Pr., junior standing, MT 472 or instructor's approval.**
Fundamentals of traffic control in the transportation operations of business and industrial concerns.
476. **Motor Transportation (5). Pr., EC 200, junior standing.**
Economics of the motor transportation business with emphasis on freight and passenger carriers and the highway system. Particularly designed for students of business and of civil engineering.

GRADUATE COURSES

650. **Seminar (1-10). Pr., Graduate standing or consent of instructor.**
For those students engaged in intensive study and analysis of marketing and transportation problems.
690. **Special Problems (1-5).**
Variable content in the marketing and transportation areas.
699. **Research and Thesis. Credit to be arranged.**

Materials Engineering (MTL)

This curriculum is administered by the Department of Mechanical Engineering. Materials Engineering courses are listed by cooperating academic departments; refer to the description of the curriculum under Mechanical Engineering in the section on The School of Engineering for required and elective courses.

Mathematics (MH)

Professors Burton, Head, Ball, Butz, B. Fitzpatrick, P. Fitzpatrick, Ikenberry, Parker, Perry, and E. Williams

Visiting Professor Fiedler

Research Professor Haynsworth

Associate Professors Baskerville, Bennett, Calder, Coleman, J. Ford,

R. Ford, C. Robinson, Thompson, and L. Williams

Research Assistant Professor Transue

Assistant Professors Brown, Guenther, Hinrichsen, Lindner, Ott,

Reed, Sanders, and Zenor

Instructors Bass, Bean, Hartwig, Khleif, Murphy, Powell, Propes,

Salzmann, Smith, Trimble, Van Doren, J. Williams, and N. Williams

100. **Mathematical Insights (5).**
For students in the arts or humanities. The purpose of this course is to give such students insight into the nature of mathematics by engaging them in mathematical thought processes within a suitable elementary framework. Prior credit for any other University mathematics course precludes credit for this course.
159. **Precalculus Mathematics (5).**
Preparation for MH 161 but not MH 162. Emphasizes algebraic techniques, coordinate geometry, functions and relations and their graphs. Students who need a precalculus foundation which emphasizes trigonometry should take MH 160.
160. **Algebra and Trigonometry (5).**
Basic analytic and geometric properties of the algebraic and trigonometric functions. Prepares students for MH 161. Credit will not be allowed for both MH 159 and MH 160.
161. **Analytic Geometry and Calculus (5). Pr., MH 159 or MH 160.**

- 162-163. **Analytic Geometry and Calculus (5-5).** Pr., MH 160 and MH 161.
A continuation of MH 161.
- 220-221-222. **Introduction to Analysis I, II, III (5-5-5).** Pr., MH 163.
The real number system leading to theorems concerning number sets, sequences and graphs of functions; Riemann-Stieltjes integration, continuity, the derivative and functions of bounded variation; functions whose domains are in Euclidean spaces.
264. **Analytic Geometry and Calculus (5).** Pr., MH 163.
A continuation of MH 161-2-3. Infinite series, partial derivatives, multiple integrals.
265. **Linear Differential Equations (3).** Coreq., MH 264; or alternately, Pr., MH 221.
First and second-order linear differential equations including the solution of such equations by infinite series.
266. **Topics in Linear Algebra (3).** Pr., MH 163.
Linear spaces, vector spaces, linear transformations, matrices and determinants. Not open to students who have credit for MH 333 or MH 405 or MH 437.
267. **Introductory Probability and Statistics (5).** Coreq., MH 161.
Designed for students whose fields require a basic knowledge of probability and for those who plan to take upper level courses in probability and statistics. Conditional probability, independence and random variables with emphasis on discrete random variables.
- 281-282-283. **Elementary Mathematics (5-5-5).** Pr., sophomore standing.
These courses provide appropriate mathematical insights for elementary school teachers. Emphasis is on the structure of the number systems, the basic concepts of algebra and informal geometry.
- 331-332-333. **Introduction to Modern Algebra I, II, III (5-5-5).** Pr., MH 163.
Sets, mapping, the integers, isomorphisms, and homomorphisms; groups, rings, fields, ideals; factorization problems, Euclidean domains, extension, fields, vector spaces.
362. **Engineering Mathematics I (3).** Pr., MH 265.
Fourier Series, partial differential equations, special functions.
401. **The Calculus of Vector Functions (3).** Pr., MH 266 or consent of instructor.
Derivative and integral of vector functions, gradient, divergence, curl, Green's Theorem, Stokes Theorem.
403. **Engineering Mathematics II (5).** Pr., MH 265; junior standing.
Complex numbers, functions, mappings, residues, contour integration.
405. **Matrix Theory and Applications (5).** Pr., MH 266 or MH 333; junior standing.
Canonical forms, determinants, linear equations, characteristic value problems.
406. **Elementary Partial Differential Equations (5).** Pr., MH 265 or MH 428; junior standing.
First and second order linear partial differential equations with emphasis on the method of eigenfunction expansions.
407. **Introduction to Celestial Mechanics (5).** Pr., consent of instructor; junior standing.
Dynamics of a particle, two-body problem, coordinate transformations, series expansions in elliptic motion, introduction to general perturbation theory.
- 420-421-422. **Analysis I, II, III (5-5-5).** Pr., MH 264; junior standing.
An advanced treatment of the topics of MH 220-221-222 (real number sets, sequences and graphs of functions; Riemann-Stieltjes integration, continuity, the derivative and functions of bounded variation; functions whose domains are in Euclidean spaces). Duplicate credit will not be given for corresponding courses in the MH 220-221-222 and MH 420-421-422 sequences.
- 428-429. **Linear Differential Systems (3-3).** Pr., MH 222 or consent of instructor; junior standing.
Systems of linear ordinary differential equations, series solutions, approximate solutions.
431. **Modern Algebra (5).** Pr., one junior-senior level course in algebra.
Integral domains, groups, rings, fields.
437. **Linear Algebra (5).** Pr., MH 333 or MH 431; junior standing.
Linear transformations, matrix algebra, finite-dimensional vector spaces.
- 441-442. **Geometry, A Modern View I, II (5-5).** Pr., MH 163; junior standing.
A development of geometry using the real number system and measurement as proposed by G. D. Birkhoff. The course moves rapidly, with definitions and proofs, through the foundations of geometry and into the main body of geometric theory.
443. **Linear Geometry (5).** Pr., MH 163; junior standing.
Transformations in projective, affine, and Euclidean planes.
444. **Combinatorial Geometry in the Plane (5).** Pr., MH 163; junior standing.
Helly's and related theorems.
447. **Foundations of Plane Geometry (5).** Pr., MH 163; junior standing.
Axiomatic development of a plane geometry. Points, lines, congruences. Emphasis is placed on development of proofs by students.
- 450-451. **Metric Spaces (3-3).** Pr., MH 221 or consent of instructor; junior standing.
The elementary properties of metric spaces with special attention to the line and the plane.

460. **Introduction to Numerical Analysis (5).** Pr., MH 265 or MH 428, junior standing; a knowledge of an algorithmic computer language available at the Computer Center.†
Polynomial approximation, numerical differentiation and integration, solution of ordinary differential equations (initial value problems) error analysis.
461. **Numerical Matrix Analysis (5).** Pr., MH 266 or MH 333; junior standing; a knowledge of an algorithmic computer language available at the Computer Center.†
Numerical solution of algebraic equations and of systems of linear equations, solution of boundary value problems, numerical calculation of characteristic values and vectors, error analysis.
464. **Probability Theory (5).** Pr., MH 420 or MH 221 or consent of instructor; junior standing.
Complete probability fields, probability functions, random variables, convergent sequences of random variables, conditional probability, distribution functions, various applications.
467. **Mathematical Statistics I (5).** Pr., MH 163; junior standing.
Descriptive statistics, elementary probability and sampling theory, least squares and correlation.
468. **Mathematical Statistics II (5).** Pr., MH 467; junior standing.
Chi-square test, best estimates, small sample theory, analysis of variance, non-parametric methods.
- *480. **Mathematics of Computation (5).** Pr., MH 162; junior standing.
Various numerical methods of problem solution; programming these methods using an algebraic compiler.
- *485. **Fundamentals of Algebra I (5).** Pr., MH 162; junior standing.
The structure of the integers, factorization of the integers, congruent theory.
- *486. **Foundation of Geometry (5).** Pr., MH 162; junior standing.
Euclidean and non-Euclidean geometries with emphasis given to their logical development from basic assumptions. Some attention given to the history of geometry.
- *487. **Fundamentals of Analysis (5).** Pr., MH 162; junior standing.
A study of mathematical analysis with emphasis on basic principles and relationships. (Not for majors in science and mathematics.)
491. **Special Problems (1-5).** Pr., consent of instructor; junior standing.
Not open to graduate students. An individual problems course. Each student will work under the direction of a staff member on some problem of mutual interest.

GRADUATE COURSES

- 602-603. **Celestial Mechanics I, II (5-5).** Pr., MH 407 or consent of instructor.
Elliptic motion, potentials of attracting bodies, numerical integration and differential correction of orbits, lunar theory, theory of perturbations, LaGrange's method and introduction to canonical variables, the disturbing function, artificial satellite orbit theory.
- 607-608-609. **Applied Mathematics I, II, III (5-5-5).** Pr., approved graduate standing.
Scalar, vector, and dyadic fields; equations governing fields; Helmholtz's and Laplace's equations in curvilinear coordinates; separation of variables; boundary conditions and eigenfunctions; Green's functions.
610. **Special Functions (5).** Pr., consent of instructor.
613. **Tensor Analysis (5).** Pr., consent of instructor.
- 620-621. **Functions of Real Variables I, II (5-5).** Pr., departmental approval.
Measure theory and Lebesgue Integration.
- 622-623. **Functions of a Complex Variable I, II (5-5).** Pr., departmental approval.
Complex numbers; analytic functions; derivatives, Cauchy integral theorem and formula; Taylor and Laurent series; analytic continuation; residues; maximum principle; Riemann surfaces; conformal mapping; families of analytic functions.
- 624-625-626. **Normed Linear Spaces (5-5-5).** Pr., departmental approval.
Bounded linear transformations and linear functionals on Banach and Hilbert spaces, including conjugate spaces, adjoint operators, self adjoint operators, spectral theory, applications to particular spaces.
- 628-629. **Advanced Theory of Differential Equations (5-5).** Pr., departmental approval.
Existence, uniqueness and continuation theorems for ordinary and partial differential equations; nature of solutions. The first quarter will be devoted to ordinary equations, the second to partial differential equations.
- 631-632. **Modern Algebra I, II (5-5).** Pr., departmental approval.
Numbers; sets; groups; rings; fields of polynomials; Galois theory.
633. **Theory of Groups (5).** Pr., MH 631.
Sylow theory, abelian groups, chain conditions.
634. **Theory of Rings (5).** Pr., MH 632 or departmental approval.
Structure of rings, ideals in commutative rings.

†This information can be obtained by taking IE 204.

*Not available to graduate students in the areas of science or mathematics.

- 637-638-639. Matrices (5-5-5). Pr., MH 437.**
Special types of matrices; reduction to canonical form; function of matrices; readings in current literature.
- 640-641-642. Functional Analysis (5-5-5). Pr., MH 626 or consent of instructor.**
Topics in the advanced theory of linear functionals and operators on Banach and Hilbert spaces, chosen to lead students into research work in this field.
- 645-646. Differential Geometry I, II (5-5). Pr., departmental approval.**
Tensor analysis; curves and surfaces in Euclidean space; introduction to Riemannian geometry of n -dimensions.
- 650-651-652. General Topology (5-5-5). Pr., consent of instructor.**
An axiomatic development of point-set topology; connectivity, compactness, separability, topological equivalence, well-ordering, inner limiting sets, Cartesian products.
- 653. Dimension Theory (5). Pr., consent of instructor.**
The topological study of dimension in separable metric spaces.
- 654-655. Point-Set Topology (5-5). Pr., MH 652.**
Upper semi-continuous collections, indecomposable continua, metrization problems, inverse limits, other topics.
- 657-658. Algebraic Topology (5-5). Pr., consent of instructor.**
The fundamental group, homology and cohomology groups, simplicial complexes, other topics.
- 661. Advanced Numerical Analysis (5). Pr., MH 461, and MH 265 or MH 428.**
Numerical solution of partial differential equations.
- 667. Mathematical Statistics II (5). Pr., MH 468 or consent of instructor.**
Advanced probability and sampling theory, advanced regression and correlation, analysis of variance, Monte Carlo method, factor analysis.
- 668. Mathematical Statistics III (5). Pr., MH 667.**
Estimation, experimental design, non-parametric methods, sequential analysis, game theory, linear programming, covariance techniques.
- Note: Courses 683 through 688 listed below are for Education majors and are not available to graduate students in science or mathematics. They are offered in summer only.
- 683. Number Systems (5). Pr., approved graduate standing.**
Detailed construction of the number system with close attention paid to the logic employed. This course is intended to furnish the high school teacher with a thorough understanding of the number system and its role in high school algebra and analysis.
- 685. Fundamentals of Algebra II (5). Pr., approved standing.**
Number fields, including the fields of rational, real, and complex numbers; the algebra of polynomials over a field; factorization of polynomials; and theory of equations.
- 686. Fundamentals of Algebra III (5). Pr., MH 685.**
Continuation of MH 685.
- 687. Fundamentals of Analysis II (5). Pr., MH 487.**
Continuation of MH 487 with the introduction of more sophisticated ideas, e.g., the completeness axiom, continuity and inverse functions.
- 688. Fundamentals of Analysis III (5). Pr., MH 687.**
Continuation of MH 687.
- 691. Directed Reading in Algebra (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 692. Directed Reading in Analysis. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 693. Directed Reading in Applied Mathematics. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 694. Directed Reading in Geometry. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 695. Directed Reading in Topology. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 696. Directed Reading in Matrix Theory. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 697. Directed Reading in Numerical Analysis. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.**
- 699. Research and Thesis. (Credit to be arranged.) May be repeated for credit.**
- 799. Research and Dissertation. (Credit to be arranged.)**

Mechanical Engineering (ME)

Professors Vestal, Head, Barbin, Bussell, Jemian, Jones, Assistant Head, Lawson,

Maynor, Shaw, Swinson, Tanger, and Vachon

Associate Professors Cooley, Dyer, Fluker, Reece, Scarborough, Smith, and Wilcox

Assistant Professors Dunn, Goodling, Harmon, Leppert, Maples, and Yu

Instructors Aderholt, Cox, and Terrill

Visting Lecturer Touloukian

202. **Engineering Materials Science—Structure** (3). Pr. CH 103, ~~PS 220 or PS 209~~.
Theories and structures of crystalline and amorphous materials. Bonding, crystal classes, phase equilibrium relationships, diffusion and phase transformations.
205. **Applied Mechanics—Statics** (4). Coreq., MH 264 and PS 220.
Resolution and composition of forces; equilibrium of force systems; friction; second moments.
207. **Strength of Materials I** (3). Pr., ME 205 and MH 264, coreq., MH 265.
Fundamentals of stress and strain; stress-strain relations; temperature effects; bar with axial force; thinwall cylinders; torsion.
210. **Engineering Method** (1). Coreq., PS 222.
A rational approach to the solution of engineering problems, treating the relationship between analysis and experiments, including a review of basic postulates and analytical models, with applications in various areas. (Students with credit in PN 103 may not take this course for credit.)
301. **Thermodynamics I** (4). Pr., MH 264 and PS 220.
Laws of thermodynamics; energy transformations; properties and relationships among properties; equations of state and simple processes and cycles.
302. **Thermodynamics II** (3). Pr., ME 301.
Thermodynamic analysis of real and ideal cycles, and concepts of compressible fluid flow.
303. **Thermodynamics III** (3). Pr., ME 301.
Property determination, Maxwell's relations, thermodynamics of mixtures, combustion, and chemical equilibrium.
304. **Engineering Materials Science—Properties** (3). Pr., ME 202, ME 207.
Relationships between structure and properties and the effects of environment. Mechanical properties, plasticity of single and poly-crystals, and properties of composite materials.
308. **Computation Laboratory** (2). Lec. 1, Lab. 3. Pr., MH 265.
Application of analog and digital programming in Mechanical Engineering.
309. **Materials Testing Laboratory** (1). Lab. 3. Coreq., ME 316.
Applications of principles in solid mechanics.
312. **Measurements Laboratory** (3). Lec. 2, Lab. 3. Pr., ME 308.
The theory and practice of engineering measurements, including treatment of experimental data and the design of experiments.
316. **Strength of Materials II** (4). Pr., ME 207, coreq., ME 309.
Beams; thick wall cylinders; theories of failure; energy.
321. **Dynamics I** (4). Pr., ME 205, coreq., MH 265.
Kinematics of points, lines, and rigid bodies; relative motion and coordinate transformations; kinetics; conservation of energy and momentum.
322. **Dynamics II** (4). Pr., ME 321, coreq., MH 266.
Matrix methods in kinematics; introduction to celestial mechanics; Euler's equations of motion; the inertia tensor; gyroscopic motion.
323. **Dynamics of Machines** (4). Lec. 3, Lab. 3. Pr., ME 207, ME 308, ME 322.
Analysis of rotating systems. Dynamic force analysis of mechanisms and complexes of mechanisms. Oscillating system.
335. **Engineering Materials Science—Physical Metallurgy** (4). Lec. 3, Lab. 3. Pr., ME 304.
Relationship between structure and properties of metals. Melting and solidification, crystal structure, dislocation and imperfection theories, alloying, deformation, and transformations.
336. **Physical Analysis of Materials I** (4). Lec. 3, Lab. 3. Pr., ME 335.
The analysis and interpretation of the structures of materials using optical techniques. Specific physical properties will be measured. Samples will be prepared and processed by the students.
337. **The Physical Analysis of Materials II** (4). Lec. 3, Lab. 3. Pr., ME 336.
The analysis and interpretation of the structures and properties of materials using special techniques. Diffraction, radiography and various non-destructive test procedures will be employed.
338. **Phase Diagrams** (4). Lec. 3, Lab. 3. Pr., ME 335, CH 412.
Methods of representing and interpreting phase equilibria. Binary and multicomponent systems. Simpler temperature-composition systems and more complex temperature-pressure-composition systems. Major emphasis on applications. Minor emphasis on phase diagram determination and thermodynamics.

340. **Fluid Mechanics I (3).** Pr., ME 321, ME 301 and ME 207.
Fluid properties; dimensional analysis; fluid statics; fluid kinematics; strain rates; differential forms of conservation laws; applications to exterior and interior flows.
341. **Fluid Mechanics II (4).** Pr., ME 340, coreq., ME 302, ME 322.
Potential theory; vorticity; stream functions; viscous flow; boundary layers; turbulent flow.
401. **Statistical Thermodynamics (3).** Pr., ME 301 or departmental approval and junior standing.
Fundamental laws of thermodynamics and thermodynamic properties from the microscopic point of view.
402. **Introduction to Optimal Systems (3).** Pr., MH 265 and junior standing.
Introduction to optimal criteria; Euler equations for functionals; applications to engineering problems.
414. **Turbomachines (4).** Pr., ME 341 or departmental approval and junior standing.
Applications of fluid mechanics to turbomachines, such as pumps, compressors, turbines, and fluid couplings, control devices.
415. **Thermodynamics of Power Systems (4).** Pr., ME 302, ME 303, ME 341. Coreq., ME 421 or departmental approval and junior standing.
Design and analysis of static and dynamic thermal power systems.
420. **Thermal Systems Laboratory (2).** Lec. 1, Lab. 3. Pr., ME 312 and ME 415.
Selected experiments on thermal systems evaluation.
421. **Heat Transfer (4).** Pr., ME 340, EE 262, MH 265, or departmental approval and junior standing.
Fundamental principles of heat transfer by steady and unsteady conduction, thermal and luminous radiation, boiling and condensation, free and forced convection.
422. **Transport Processes (3).** Pr., ME 421 or departmental approval and junior standing.
Transport processes involving mass, momentum, and energy transfer combined with heat and mass transfer in chemical reacting boundary layers.
425. **Gas and Steam Turbines (4).** Pr., ME 302, ME 341, and senior standing.
Thermodynamic theory and design of nozzles and blades for gas and steam turbines.
427. **Dynamics of Physical Systems (4).** Pr., ME 323, ME 340 and junior standing.
Motion of systems represented by first and second order differential equations. Transient types and response of physical systems. Transfer functions.
428. **Air Conditioning and Refrigeration (4).** Pr., ME 302, ME 421 and junior standing.
Theory and design of heating, cooling and ventilating systems, and refrigeration systems, including cryogenics.
432. **Automatic Controls (3).** Pr., MH 265, ME 341, ME 427 and junior standing.
Control systems fundamentals. Systems analysis techniques. Applications to machine and process control.
436. **Engineering Materials Science—Ferrous Metallurgy (3).** Pr., ME 335, and junior standing.
Design of ferrous metals following modern theory and practice. Hardenability, alloying, deformation, and special purpose steels.
437. **Engineering Materials Science—Nonferrous Metallurgy (3).** Pr., ME 335 and junior standing.
Design of nonferrous metals following modern theory and practice. Aluminum and copper-beryllium systems, corrosion resistant alloys, refractory metals, strengthening mechanisms, spacecraft environments.
438. **Residual Stresses in Metals (3).** Pr., ME 335, and junior standing.
Production and measurement of residual stresses in metals; relation of residual stresses to fatigue; consideration of fatigue in design.
439. **Mechanical Engineering Design I (4).** Lec. 3, Lab. 3. Pr., ME 323; coreq., ME 335, ME 427.
Design of machine elements for static and dynamic stresses with the emphasis on synthesis and creative design.
440. **Mechanical Engineering Design II (3).** Lec. 2, Lab. 3. Pr., ME 439, ME 316.
The solution of typical engineering systems problems by group or team effort, requiring the development of skill and co-operation in the use of analysis, synthesis, creative design and optimization.
441. **Engineering Systems (4).** Lec. 3, Lab. 3. Pr., senior standing and approval of department head.
Mechanical Engineering design problems requiring the development of skill in the use of analysis, synthesis and creativeness in the design of engineering systems.
443. **Photoelastic Stress and Strain Analysis (3).** Pr., ME 207 and junior standing.
Theory of the polariscope; two- and three-dimensional model making and preparation; techniques of data collection and photoelectric models and analysis.

446. **Advanced Physical Metallurgy—Theoretical Metallurgy (3).** Pr., ME 335, CH 408, PS 222.
The physical properties of metals in relation to the modern theories of metals.
447. **Advanced Physical Metallurgy—Plasticity (4).** Lec. 3, Lab. 3. Pr., ME 335, ME 316.
The macro- and micro-processes involved in the plastic deformation of metals. Slip, twinning, dislocation theory, creep, fatigue, impact, high velocity deformation, and other plastic deformation processes will be studied in relation to current knowledge.
448. **Introduction to Ceramics (3).** Pr., ME 335.
The engineering applications and design principles of important ceramic materials will be studied with particular attention directed to the structure-property relationships. Both glassy and crystalline ceramic materials will be included.
450. **Special Problems. (Credit 1-5.)** Pr., Department Head approval, junior standing.
Individual student endeavor under staff supervision involving special problems of an advanced nature.
451. **Advanced Projects (3).** Lec. 1, Lab. 6. Pr., ME 421, ME 341, coreq., ME 440, and senior standing.
Individual projects of a current nature, involving both analysis and synthesis, culminating in a formal report.

GRADUATE COURSES

604. **Advanced Thermodynamics I (3).** Pr., ME 303 and graduate standing.
Classical thermodynamics of reactive and nonreactive systems; applications.
605. **Advanced Thermodynamics II (3).** Pr., ME 604.
Statistical treatment of the laws and properties of thermodynamic systems; applications.
606. **Propulsion Systems (4).** Pr., departmental approval.
Chemical systems including liquid and solid rocket engines; thermionic engines and ionic propulsion; plasma and nuclear propulsion systems.
607. **Energy Conversion Systems (3).** Pr., ME 605, PS 320 or departmental approval.
A review of quantum mechanics and irreversible thermodynamics; study of direct energy converters, viz, thermoelectric, photovoltaic, thermionic and magnetohydrodynamic generators and fuel cells.
608. **Advanced Thermodynamics III (3).** Pr., ME 605.
Thermodynamics of nonequilibrium processes.
620. **Heat Transmission—Conduction (3).** Pr., ME 421, MH 362 or departmental approval.
Formulations and solutions of steady, steady periodic, and unsteady heat conduction problems.
621. **Heat Transmission—Convection (3).** Pr., ME 421.
General problems of convection, forced convection heat transfer, free convection, thermodynamic boundary layers, condensing and boiling, heat transfer to liquid metals and analysis of heat exchangers.
622. **Heat Transmission—Radiation (3).** Pr., ME 421.
Fundamental laws of radiation, net radiation methods, configuration factors, radiation through absorbing media, solar terrestrial and celestial radiation, and thermometry and temperature control.
630. **Advanced Strength of Materials (3).** Pr., ME 316, MH 362 or departmental approval.
Stress and strain analyses of curved beams and beams on elastic foundations; energy methods; selected topics from the literature; stress and strain analyses in bars of non-circular section subjected to torsion.
631. **Theory of Elasticity I (3).** Pr., departmental approval.
Theory of stress and strain and stress-strain relations. Laws of balance in momentum, moment of momentum, and energy. Solution by tensor stress function and displacement functions.
632. **Theory of Elasticity II (3).** Pr., ME 631.
Continuation of solutions by potential functions. Solutions of two dimensional problems by Kolosov-Muskhelishvili methods.
633. **Experimental Stress Analysis (3).** Pr., ME 316.
Stress analyses by experimental techniques including transmission and art scattered light photoelasticity; strain gages, brittle coatings, photoelastic coatings. Moiré patterns are developed.
634. **Elastic Stability (3).** Pr., ME 631 or departmental approval.
Stability of conservative and nonconservative systems. Buckling of slender bars and thin-walled cross-sections; buckling of plates and shells. Buckling loads by Rayleigh-Ritz, Galerkin, and Kantorovich methods.
635. **Intermediate Dynamics (3).** Pr., ME 340, MH 362.
Dynamics of particles and systems of particles applied to engineering problems. Work and energy, and impulse and momentum principles. LaGrange's equations and Hamilton's principle.

636. **Non-Linear Oscillations (3). Pr., ME 427 or departmental approval.**
Method of phase plane to linear systems. Self-excited and relaxation oscillations. Routh-Hurwitz and Liapunov criteria on stability. Introduction to asymptotic method to non-linear oscillations.
637. **Theory of Plates (3). Pr., ME 631.**
Analyses of plates of various shapes under transverse and in-plane loadings with different boundary conditions. Buckling of plates due to in-plane loadings. Introduction to von Kármán large deflection theory.
638. **Theory of Shells (3). Pr., departmental approval.**
Introduction to differential geometry. Development of governing equations for shells under arbitrary loading. Shallow shell theory with applications. Asymptotic method for solution of differential equations in shell theory.
639. **Variational Mechanics (3). Pr., departmental approval.**
The problem of Bolza, Mayer and LaGrange with fixed and variable end points; Hamilton's principle and LaGrange's equations; energy method; Rayleigh's principle and Rayleigh-Ritz method; Galerkin method; variational methods; applications.
640. **Fluid Dynamics (3). Pr., ME 362 and graduate standing.**
Navier-Stokes Equations. Exact and approximate solutions. Euler's equations. Continuity. Energy equations. Irrotational flow.
641. **Boundary Layer Theory (3). Pr., ME 640.**
Hydrodynamic and thermal boundary layers. Prandtl's equations, integral relations and approximate techniques.
642. **Gas Dynamics I (3). Pr., ME 640.**
Compressible flow equations; Isentropic flow; Fanno line flow; Rayleigh line flow; shock waves; high speed flow; internal and external flows; forces on immersed bodies.
643. **Gas Dynamics II (3). Pr., ME 642 and ME 605.**
Continuation of ME 642 with emphasis on real gas effects and non-equilibrium flow.
644. **Turbulence (3). Pr., ME 641.**
Analysis of wall-affected and free turbulent flows.
660. **Structure and Properties of Solids (3). Pr., departmental approval.**
Denominations of structure are considered, via an interdisciplinary approach, from the viewpoint of providing a fundamental insight with respect to the genesis of selected macroscopic properties.
661. **Corrosion: Fundamentals and Applications (3). Pr., departmental approval.**
Nature and mechanisms of corrosion. Effects of: material-manufacturing methods, construction and environment. Corrosion types and methods of corrosion control.
662. **Performance of Metals at Elevated Temperatures (3). Pr., departmental approval.**
Fundamental behavior of metals at elevated temperatures. Commercial and experimental types of ferrous and nonferrous alloys and their suitability for elevated temperature applications.
663. **X-Ray Metallography (3). Pr., ME 335 and ME 362.**
The principles of X-ray absorption and diffraction and application to the study of metals and other crystalline materials.
665. **Strengthening of Metals (3). Pr., ME 335.**
A treatment of the six basic mechanisms by which metals are strengthened. Emphasis is placed on causative factors and accompanying manifestations.
666. **Plasticity of Metals (3). Pr., ME 335.**
A quantitative treatment of: the minimization of plastic flow, by means of design considerations, where the phenomenon is associated with deleterious effects; the maximization of plastic flow, by means of material-condition and forming method considerations, where the objective is to form or shape.
667. **Dislocation Theory (3). Pr., departmental approval.**
The nature and properties of dislocations including crystal structure and imperfections, dislocation geometry in both ideal and real crystals, dislocation configurations, multiplication and interactions with various imperfections, and methods of observation.
675. **Planar Mechanisms (3). Pr., ME 323.**
Analysis of simple and complex planar mechanisms. Synthesis by finite displacement and infinitesimal motion methods.
676. **Spatial Mechanisms (3). Pr., ME 675.**
Analysis and synthesis of spatial mechanisms.
677. **Selected Topics in Mechanical Design (3). Pr., ME 630 and ME 675.**
Dynamic properties of trains of mechanisms; hydrostatic and hydrodynamic lubrication; thermal equilibrium; wear and fatigue problems; design techniques involving computers.
690. **Seminar (credit to be arranged). May be taken more than one quarter.**
691. **Directed Reading in Mechanical Engineering (credit to be arranged). May be taken more than one quarter.**
692. **Engineering Analysis (3). Pr., departmental approval.**
Study of equilibrium, eigenvalue, and propagation problems for continuous systems. Physical laws and mathematical properties discussed with considerable emphasis on numerical solutions.

693. **Experimental Research Methods (3).** Pr., departmental approval.
Numerical methods and data processing, mathematical statistics and probability, analysis of experimental data, errors of measurement, and instrumentation.
694. **Fluid Machines (3).** Pr., ME 642.
Similarity considerations; cavitation; cascade theory; axial and radial flow machines.
699. **Research and Thesis (credit to be arranged).** May be taken more than one quarter.
799. **Research and Dissertation (credit to be arranged).** May be taken more than one quarter.

Military Science (MS)

BASIC COURSE

First Year (Freshman)

Military Science I

101. **Orientation; History, Mission and Organization of the ROTC Program, Mechanical Training, M1 Rifle; Military/Civilian Obligations; US Army Reserves and National Guard; Definition and Causes of War; Evolution of Weapons and Warfare (1).** Lec. 1, Leadership Lab. 1.
102. **Principles of War; Factors of National Power; National Objectives, Policies, Strategies and Instruments; Organization and Mission of the Armed Forces (1).** Lec. 1, Leadership Lab. 1.
103. **Marksmanship; Range Firing; Organization, Mission and Capabilities of the Army (1).** Lec. 1, Leadership Lab. 1.

Second Year (Sophomore)

Military Science II (Pr., MS I or as determined by the Professor of Military Science).

201. **American Military History (1).** Lec. 2, Leadership Lab. 1.
The origins of the American Army to the present with emphasis on factors which led to the organizational, tactical, logistical, operational, strategic, social, and similar patterns found in the present day Army.
202. **Introduction to Tactics and Operations (Map and Aerial Photograph Reading) (1).** Lec. 2, Leadership Lab. 1.
Application of basic principles, emphasizing terrain appreciation and evaluation; marginal information; military and topographic map symbols; orientation; intersection; resection; military grid reference system; classes of aerial photography and elementary aerial photography reading.
203. **Introduction to Tactics and Operations (1).** Lec. 2, Leadership Lab. 1.
Instruction in the basic military team; combat formations and patrolling; field fortification and camouflage, cover and concealment; technique of fire and principles of offensive and defensive combat.

ADVANCED COURSE

Third Year (Junior)

Military Science III (Pr., all MS I and MS II or equivalent as determined by Professor of Military Science).

301. **Leadership and Management I (3).** Lec. 4, Leadership Lab. 2.
Educational psychology as pertains to the three stage instructional process; responsibilities and basic qualities of a leader; application of sound principles to the problems of platoon leaders.
302. **Fundamentals and Dynamics of the Military Team I (3).** Lec. 4, Leadership Lab. 2.
Principles of Internal Defense/Development; familiarization with the roles of the various branches in the overall mission of the Army; principles and methods of communications.
303. **Fundamentals and Dynamics of the Military Team I (3).** Lec. 4, Summer Camp Preparatory Training 2.
Infantry organization; employment of the rifle platoon and company in offensive and defensive combat; familiarization with administrative procedures and general conduct of training at ROTC summer camp.

Fourth Year (Senior)

Military Science IV (Pr., MS III or as determined by the Professor of Military Science).

401. **Fundamentals and Dynamics of Military Team II (3). Lec. 4, Leadership Lab. 2.** Duties of the division staff, emphasizing staff estimates and reports, military intelligence, staff planning, operations, administration, logistics, and staff recommendations; principles of Internal Defense/Development and the Army Readiness Program.
402. **Fundamentals and Dynamics of Military Team II (3). Lec. 4, Leadership Lab. 2.** The fundamentals of the application of force using as a vehicle the combined arms team (Infantry, Armor, Artillery); duties and responsibilities of company and battalion officers in the combat arms.
403. **Leadership and Management II (3). Lec. 4, Leadership Lab. 2.** Functioning of military law system; relation of military law to civil law; types of conflict; inter-relationship of elements of national power; customs of the service; code of conduct; responsibilities and obligations of an officer.

Music (MU)

Professors Hinton, Head, Glyde, Tamblyn, Rosenbaum, and Tyre

Associate Professors Bentley, Moore, and Walls

Assistant Professors Calder, Lavore, Stephenson, Mickelson, Howard,
Rawlins, and Vinson

Instructors Colaianni, Kendrick, and Kruger

100. **Music Convocation (0). All quarters. Required of all music students each quarter.**
Performance & lectures by faculty, guest artists, and students. Music & music education majors are expected to perform at the teacher's discretion and in accordance with departmental rules.
- 131-32-33. **Material and Organization of Music (5-5-5).**
A systematic study of harmony, counterpoint, form and style through the literature of music.
- 211-12. **Service Playing (1-1).**
Hymn playing, modulation, selected anthems and oratorio selections, simple improvisation and transposition.
- 231-32-33. **Material & Organization of Music (5-5-5). Pr., 133.**
Continuation of the study of Harmony, Counterpoint, Form and Style in music.
- 251-52-53. **Survey of Music Literature (1-1-1). Lec. and Lab. 3-3-3.**
Presentation of instrumental solo, opera and symphonic music, acquainting the student with musical compositions and composers with emphasis on music literature of the past three centuries.
311. **Liturgies (3).**
Liturgical worship service of Roman Catholic and Protestant churches, plus non-liturgical forms of other Protestant denominations.
312. **Hymnology (3).**
The musical significance of hymns of the Christian church from the earliest times to the present.
- 331-32-33. **Materials and Organization of Music (5-5-5). Pr., 233.**
Continuation of second year systematic study of harmony, counterpoint, form and style through the literature of music.
- 334-35-36. **Counterpoint I-II-III (3-3-3). Pr., MU 233.**
I. Strict Counterpoint. Counterpoint in 5 species in 2 or 3 voices concluding with invertible counterpoint. II. Tonal counterpoint. Contrapuntal devices of the 18th Century including double counterpoint and imitation. III. Invention and Fugue. The study and writing of 2 part inventions, canonic treatment, and the 3 voice fugue.
- 337-38-39. **Modern Harmony I, II, III (3-3-3). Pr., 333.**
Twentieth century harmonic devices. An integrated approach to understanding contemporary writing, with emphasis on original work and analysis of the principal departments from "traditional" harmony.
- 351-52-53. **Music History I-II-III (3-3-3).**
Development of music from early times to the present day. Lectures, recorded examples, readings.
- 361-62-63. **Conducting I-II-III (3-1-1). Pr., MU 133, MU 153.**
I. Elementary basic baton techniques and introduction to score reading. II. Choral conducting. Elementary course in choral score reading and conducting choir and glee clubs. III. Instrumental conducting. Elementary course in instrumental score reading and conducting band, orchestra and instrumental ensembles.
371. **Introduction to Music (3). No credit allowed to Music Majors and Minors.**
The understanding of music including an explanation of basic terms, notations, rhythm, tonal system, vocal and piano score reading.

409. **Marching Band Techniques (3).**
Fundamental methods and procedures of the Marching Band.
414. **Care and Repair of Musical Instruments (1).** Lec. 1, Lab. 3. Pr., senior standing.
Selection, care and repair of woodwind, brass and string instruments with emphasis on adjustments which should be made by the instrumental director.
415. **Organ Literature and Design (3).**
Survey of organ literature correlating the forms of compositions and types of organs for which the music was written.
416. **Church Music Seminar (3).** Pr., MU 311, 312, 361, 362, 415, or 442, or approval of instructor.
The processes of establishing a complete Church Music program. Supervised directing of choral ensemble.
- 422-23-24. **Theory Review (3-3-3).** No credit for Applied Theory Composition or Pedagogy Majors.
Harmonic techniques of the 18th and 19th centuries, with special emphasis on style and design.
- 431-32-33. **Music Analysis (3-3-3).** Pr., MU 253 and MU 233.
Harmonic and structural analysis of smaller instrumental forms; harmonic and structural analysis of the larger polyphonic and homophonic forms.
- 434-35-36. **Music Composition I-II-III (3-3-3).** Pr., MU 233.
Analysis, study, and writing of musical compositions in small, compound, and larger musical forms with emphasis on both stylistic and individual creative writing.
- 437-38-39. **Orchestration I-II-III (3-3-3).** Pr., MU 233.
Ranges, notation, and characteristics of orchestral instruments. Exercises in arranging for combinations of string and wind instruments. Theory and practice of orchestration for full orchestra.
441. **Piano Pedagogy (3).**
For prospective piano teachers. Study of teaching methods for beginners and succeeding levels. Classification and analysis of teaching repertoire.
442. **Vocal Pedagogy (3).**
For prospective voice teachers. An intensive study of the materials and methods of voice training. Classification and analysis of teaching repertoire.
443. **String Pedagogy (3).**
Mechanics of stringed instruments. Teaching methods, schools, and systems. Teaching literature and repertoire. For either violin, viola, cello, string bass or harp.
444. **Instrumental Pedagogy (3).**
Mechanics of brass or woodwind instruments. Teaching methods and repertoire with emphasis on solo instrumental literature.
445. **Theory Pedagogy (3).**
Required of seniors majoring in theory and composition. Designed to present the problems of sight-singing, rhythmic dictation, melodic and harmonic dictation, and part writing from a pedagogical viewpoint.
451. **Keyboard Literature (3).** Pr., junior standing.
Masterworks of the clavichord, harpsichord, organ, and piano literature from the Baroque period to the present.
452. **Vocal Literature (3).** Pr., junior standing.
Vocal literature from Elizabethan time to the present, including representative European and American repertoire.
453. **Choral Literature (3).** Pr., junior standing.
Chronological study of choral music from the Middle Ages to the present including opera, and oratorio with detailed examination of representative works.
454. **Instrumental Literature (3).**
Analysis and study of orchestral scores and parts from the classic, romantic and modern literature.
455. **Opera Literature (3).**
Vocal music of the opera from the Baroque to the present time.

General Elective Courses

201. **Fundamentals of Music (3).**
Music designed primarily to develop functional piano skills, sight-reading, rhythm and melodic skills.
372. **History of Jazz (3).**
The growth of Jazz from its African and European roots to current experimentation.
373. **Appreciation of Music (3).** May not be taken for credit by Music Majors or Minors.
Outstanding composers and compositions. No previous music training required; an orientation in the art of listening.

374. **Masterpieces of Music (3).** May not be taken for credit by Music Majors or Minors.
Representative musical works of each great period of musical history. No previous music training required.
- 477-78-79. **Music Arranging (3-3-3).** By permission.
Project course in arranging various combinations from quartet to symphonic band, and arranging for solo and choral groups.

Group Performance Courses

- 121-22-23. **Glee Club (1 hour credit per quarter).**
MEN'S GLEE CLUB AND WOMEN'S GLEE CLUB are study and performing groups open to any Auburn student. (May be taken with or without credit.)
130. **Jazz Laboratory Band (1).**
A musical ensemble for advanced musicians for the study and performance of music relating to the jazz idiom. By audition only.
- 221-22-23. **Choral Union (1 hour credit per quarter).**
Open to any Auburn student. Required for all Music Majors and Minors. (May be taken with or without credit.)
- 321-22-23. **Concert Choir (1 hour credit per quarter).**
CONCERT CHOIR is a small mixed chorus for study and performance of serious choral literature; open to any Auburn student by audition only. Students enrolled in Concert Band will have the drill portion of Basic Military Training waived. (May be taken with or without credit.)
- 124-25-26. **Concert Band (1 hour credit per quarter).**
Members of the Band are selected during the first week of each quarter. A minimum of 5 rehearsal hours per week is required, with extra rehearsals scheduled as necessary. Band members are required to be present at all rehearsals and all public performances. (May be taken with or without credit.)
- 127-28-29. **Orchestra (1 hour credit per quarter).**
Members of the symphonic orchestra are selected by try-outs during the first week of each quarter. (May be taken with or without credit.)
224. **Marching Band (1 hour credit per quarter). (Fall Quarter only.)**
Provides music for athletic contests and half-time shows at football games, various parades, pep rallies, and other campus and off-campus events. During the fall quarter, will rehearse a minimum of 9 hours per week. Physical Education may be waived for members of the Marching Band.* In addition, students will have the drill portion of basic military waived when enrolled in Marching Band. See Band Director for details. (May be taken with or without credit.)
- 227-28-29. **Opera Workshop (1 hour credit per quarter).**
Open to all students interested in opera, including performance, stage-craft, make-up, conducting, and coaching. A minimum of three hours per week rehearsal or stage-craft is required with extra time scheduled as necessary. (May be taken with or without credit.)
- 324-25-26. **Music Ensemble (1 hour credit per quarter). (By permission.)**
Primarily for advanced musicians for the study and performance of musical compositions for small instrumental and vocal groups. A minimum rehearsal of three hours per week required. (May be taken with or without credit.) Includes brass, woodwind, percussion, piano & harp ensembles.
- 327-28-29. **Piano Ensemble (1-1-1). Lab. 3-3-3.**
Study through performance of original compositions and transcriptions for piano-four-hands and two pianos using two to four players.

Applied Music

Individual instruction is available in voice, piano, organ, strings, woodwinds, harp, brass and percussion.

Students desiring study in applied music must be approved by the Head of the Department of Music before entrance into the course.

080. **Applied Music (0). May be repeated.**

Individual instruction in instrumental or vocal areas. Rudimentary practice as related to each discipline.

181-2-3. **Applied Music (3-3-3).**

281-2-3. **Applied Music (3-3-3).**

381-2-3. **Applied Music (3-3-3).**

481-2-3. **Applied Music (3-3-3).**

Individual instruction in instrumental or vocal areas. For Bachelor of Music majors only.

184-85-86. **Applied Music (1-1-1).**

284-85-86. **Applied Music (1-1-1).**

*In addition to the Physical Education stipulation, students will have the drill portion of Basic Military Training waived for the quarter they are enrolled in Marching Band.

384-85-86. **Applied Music (1-1-1).**

484-85-86. **Applied Music (1-1-1).**

Individual instruction in instrumental or vocal areas. Two ½ hour lessons per week.

187-88-89. **Applied Music (1-1-1).**

287-88-89. **Applied Music (1-1-1).**

387-88-89. **Applied Music (1-1-1).**

487-88-89. **Applied Music (1-1-1).**

Individual instruction in instrumental or vocal areas. One ½ hour lesson per week.

The amount of credit in Applied Music is based on the following practice schedule:

- 1 cr. hr.—5 hours weekly practice
- 2 cr. hrs.—10 hours weekly practice
- 3 cr. hrs.—15 hours weekly practice.

Applied Music Fees (Per Quarter)

One half-hour lesson per week	\$20.00
Two half-hour lessons per week	30.00
Use of practice room, one hour per day	3.00
Use of practice room, two hours per day	5.00

Class Instruction in Applied Music

The Music Department offers a number of classes in Applied Music open to Music Majors and Minors and to regularly registered college students who have had previous music training. These classes meet two hours per week and carry one hour credit. Tuition fee \$5.00.

104-5-6. **Piano Class (1-1-1). (2-2-2 lec. and lab.)**

Class instruction and practice in the rudiments of music as applied to piano playing. (See above for fee.)

107-8-9. **Voice Class (1-1-1). (2-2-2 lec. and lab.)**

Class instruction and practice in the rudiments of music as applied to voice. (See above for fee.)

110-11-12. **String Instruments Class (1-1-1). (2-2-2 lec. and lab.)**

Class instruction and practice in the rudiments of music as applied to violin, viola, cello and contrabass playing. (See above for fee.)

113-14-15. **Brass Instruments Class (1-1-1). (2-2-2 lec. and lab.)**

Class instruction and practice in the rudiments of music as applied to playing on trumpet, trombone and other brass instruments. (See above for fee.)

116-17-18. **Woodwind Instruments Class (1-1-1). (2-2-2 lec. and lab.)**

Class instruction and practice in the rudiments of music as applied to playing on clarinet, oboe, bassoon, flute and other woodwind instruments. (See above for fee.)

119. **Percussion Instruments Class (1). (2 labs.)**

Class instruction and practice in the rudiments of music as applied to playing percussion instruments: drums, bells, cymbals, triangle, tympani, etc. (See above for fee.)

GRADUATE COURSES

422-23-24. **Theory Review (3-3-3). Pr., senior standing and departmental approval.**

No credit for Applied, Theory-Composition, or Pedagogy majors. A review of the harmonic techniques of the 18th and 19th centuries, with special emphasis on style and design.

600-1-2. **Advanced Instrumental and Choral Conducting (2-2-2).**

Laboratory for development of skills relating to the performance of traditional and modern works. Emphasis on score reading and analysis.

603. **Brass Instruments Techniques (1). Lec. 1, Lab. 3.**

Course designed to work out specific problems with graduate students in furthering their knowledge of and skill on brass instruments.

604. **Woodwind Instruments Techniques (1). Lec. 1, Lab. 3.**

Course designed to work out specific problems with graduate students in furthering their knowledge of and skill on woodwind instruments.

605. **Percussion Instruments Techniques (1). Lec. 1, Lab. 3.**

Course designed to work out specific problems with graduate students in furthering their knowledge of and skill on percussion instruments.

606. **Music in the Arts (4).**

Music in relation to architecture, the plastic arts, and poetry.

607. **Choral Literature of the Classic, Romantic and Modern Periods (4).**

The styles, forms, and performance practices of the choral music from the Classic, Romantic and Modern periods, working primarily with scores of representative works. Participation in an approval choral organization is required.

608. **Choral Arranging (4).** Pr., departmental approval.
Advanced Arranging for various choral combinations. Participation in an approved choral organization is required.
609. **Seminar in 20th Century Music (3-3-3).** Pr., departmental approval.
Analysis and comparison of representative works of principal composers of the first half of the 20th century. Specific works chosen for each quarter. (May be repeated for a maximum of 9 hrs. credit.)
610. **Band Arranging (4).** Pr., departmental approval.
Advanced arranging for various band organizations. Participation in band is required.
611. **Orchestral Arranging (4).** Pr., departmental approval.
Advanced arranging for various orchestral organizations. Participation in orchestra is required.
612. **Acoustics in Music (3).** Pr., departmental approval.
The physics of sound as related to music.
634. **Music History Seminar (2).** Pr., departmental approval.
Different aspects of the history of music. Specific research areas chosen each quarter. (May be repeated for a maximum of 6 hrs. credit.)
644. **Repertoire Seminar (2-2-2).** Pr., departmental approval.
A comprehensive survey of music literature in the student's major area through analysis & performance. (May be repeated for a maximum of 6 hrs. credit.)
- 650-1-2. **Techniques of Private Instrumental Instruction (3-3-3).** Pr., departmental approval.
Analysis of teaching and supervised teaching.
- 660-1-2. **Independent Study in Applied Music (3-3-3).** Pr., departmental approval.
Advanced private study and recital.
- 681-2-3. **Independent Study in (A) Composition, (B) Analysis (2-3, 2-3, 2-3).** Pr., departmental approval.

Naval Science (NS)

(List of courses will be found on page 186)

Nutrition and Foods (NF)

Professors Van de Mark, *Head*, and Davis
Associate Professors Chastain, White
Assistant Professors Cannon, Driskell, Hamid, and Rush
Instructor Yu

102. **Principles of Food Preparation (5).** Lec. 3, Lab. 4. Each quarter.
Basic principles underlying the fundamental processes and standards of food preparation.
119. **Nutrition and Man (3).**
The fundamentals of nutrition and the influence of socio-economic and cultural patterns of man on fulfilling nutritional needs.
202. **Meal Management (5).** Lec. 4, Lab. 3. Each quarter. Pr., NF 102.
Planning of meals with emphasis on scientific principles of nutrition, aesthetic value, management of time and the food budget on various economic levels.
302. **Cultural Aspects of Food Service (3).** Each quarter.
Historical and artistic influences on the selection of modern table accessories used in home and institutional food services.
312. **Nutritional Biochemistry (5).** Lec. 4, Lab. 3. Pr., CH 203.
Chemistry of carbohydrates, fats, proteins, vitamins, and minerals applied to human nutrition.
322. **Food Preservation (3).** Lec. 2, Lab. 3. Fall, Summer. Pr., VM 311 or VM 200.
Principles and methods of food preservation.
342. **Nutrition and Dietetics (5).** Lec. 3, Lab. 4. Winter. Pr., NF 312, NF 372.
Identification, function, metabolism and sources of specific nutrients required by man for normal growth, development, and maintenance. For nutrition majors.
352. **Institution Organization and Personnel Management (5).** Winter.
Quality food service operation as related to management principles, methods of control, and personnel management.
353. **Community and Family Health (3).** Lec. 2, Lab. 2.
Facilities, services and agencies within the community which affect health. Field trips.
362. **Problems in Community Nutrition (3).** Pr., NF 119 or NF 372.
Environmental factors that influence the nutritional level of people.
372. **Fundamentals of Nutrition (3).** Lec. 3. Each Quarter.
Principles of human nutrition and factors influencing food requirements.

392. **Family Nutrition (3). Lec. 3. Pr., NF 372.**
Application of the principles of nutrition to family members of all ages.
402. **Diet Therapy (5). Lec. 4, Lab. 2. Spring. Pr., junior standing, NF 372, and NF 342.**
Application of principles of nutrition to various periods of stress and as a therapeutic aid in treatment of disease.
412. **Quantity Food Production (5). Lec. 3, Lab. 4. Fall. Pr., junior standing and NF 202.**
Institutional menu planning, preparation and serving of foods. Use, operation and maintenance of equipment. University kitchens are used for laboratory experience.
422. **Institution Food Purchasing (5). Lec. 4, Lab. 2. Junior standing.**
Wholesale food marketing and the purchase of food for institutions with emphasis on factors determining quality and cost.
432. **Food Service Planning, Layout and Equipment (5). Lec. 4, Lab. 2. Spring. Pr., junior standing and NF 352.**
Floor plans and layouts with emphasis on materials, specifications, and maintenance of equipment and furnishings for institutional food units.
442. **Catering (3). Lec. 2, Lab. 3. Winter. Pr., NF 202.**
Types of catered food-service functions; planning, pricing, organization, management, equipment and service.
462. **Experimental Foods (5). Pr., NF 102 and CH 203.**
Effects of variation of ingredients and treatments on quality characteristics of foods.
472. **Advanced Community Nutrition (3). Pr., junior standing and satisfactory course in nutrition.**
Nutrition problems and practices that exist in a modern society.
479. **Modern Views of Nutrition (3). Pr., junior standing and satisfactory course in nutrition.**
Current concepts in nutrition and related fields.
482. **Institution Food Service Cost Control (5). Lec. 4, Lab. 2. Pr., junior standing.**
Food control and storeroom management in hospitals, commercial units, and school food services.
489. **International Nutrition (3). Pr., junior standing and satisfactory course in nutrition.**
Nutritional status of world population and local, national, and international programs for improvement.
492. **Infant and Child Nutrition (5). Pr., junior standing and NF 372 and NF 342.**
Nutrition requirements for growth from pre-natal life through adolescence.

GRADUATE COURSES

601. **Special Seminars in Home Economics (5).**
A. Child Development and/or Family Life; B. Clothing and/or Textiles; C. Family Economics, Home Management, Equipment and/or Housing; D. Foods and/or Nutrition.
603. **Home Economics in Higher Education (5).**
The effects of scientific, technological and social developments on the family and the Home Economics profession as they have implications for higher education in this discipline. Emphasis: current trends in subject matter areas, scope and program development, administration, and instructional resources.
605. **Methods of Research in Home Economics (3).**
Research and investigation methods applicable to the various areas of Home Economics. Required of all graduate students in Nutrition and Foods.
609. **Special Problems in Nutrition and/or Foods. Credit to be arranged (2-5). Pr., consent of instructor. May be taken more than one quarter.**
620. **Experimental Foods (5). Pr., NF 462.**
Advanced study of experimental foods including chemical reactions involved in food combinations.
621. **Chemical and Physical Properties of Foods (5). Lec. 4, Lab. 3. Pr., NF 202 and NF 462.**
Chemical and physical changes of importance in food preparation and processing.
622. **Problems in Food Preservation (5). Pr., VM 200 or 311.**
Various problems which grow out of advanced study of preservation of foods. These problems are subjects for minor research.
623. **Readings in Food or Nutrition (5). Pr., NF 372 or CH 203.**
A critical survey of current literature in nutrition and food consumption.
624. **Advanced Nutrition I (5). Pr., NF 342, CH 203, NF 312, or equivalents.**
Carbohydrates, fats and proteins.
625. **Advanced Nutrition II (5). Pr., NF 342, CH 203, NF 312 or equivalents.**
Vitamins, minerals and nutritional relationships.

626. **Advanced Nutrition III (5).** Pr., NF 624 and 625, or equivalent.
Assessment and application of nutritional status. Methods of appraisal of nutritional status, dietary, biochemical and clinical.
628. **Research Methods in Nutrition (5).**
A course designed to acquaint graduate students with modern laboratory techniques used in Human Nutrition Research.
699. **Research and Thesis. Credit to be arranged.**
Required of all students under the Thesis Option in any field.

Pharmacy (PY)

Professors Coker, *Dean*, Hargreaves, Hocking, and Williams
Associate Professors Darling, Kochhar, Rush, Thomasson, and Wilken
Assistant Professor Shrader
Instructor Crevar
Research Lecturer in Toxicology Carl J. Rehling
Special Lecturers in Pharmacy Argo, Franklin, and Lyman

Pharmacy

100. **Pharmacy Convocation (0). All quarters.**
Required of all pharmacy students each quarter. Professional topics discussed by visiting lecturers, faculty and students.
101. **Introduction to Pharmacy (3).**
Orientation and general survey of the scope of pharmacy, its organizations and literature with a brief introduction into principles of pharmacy.
102. **Pharmaceutical Mathematics (3). Pr., MH 161.**
Mathematical calculations and concepts fundamental to the pharmaceutical sciences.
202. **Pharmaceutical Terminology (2). Pr., first professional year standing.**
Common terms and abbreviations used in the professional and scientific aspects of pharmacy and medicine.
205. **History of Pharmacy (3). Pr., first professional year standing.**
A general survey of the history of pharmacy designed to provide a knowledge of the heritage of the profession.
300. **Professional Accessories (3). Pr., second professional year standing.**
The use and capabilities of non-medical professional items such as clinical thermometers, rubber goods, and accessories, atomizers, surgical dressings, surgical supports, trusses.
301. **Pharmaceutical Technology I (5). Lec. 3, Lab. 6. Pr., CH 208, PY 102, second professional year standing.**
Physical-chemical principles applied to develop thorough understanding of solid pharmaceutical dosage forms from bulk powders to more sophisticated sustained-release medications.
303. **Pharmaceutical Technology II (5). Lec. 3, Lab. 6. Pr., PY 301, CH 204, CH 302.**
Continuation of PY 301 in which physical and chemical principles concerning homogeneous liquid dosage forms are studied. Selected official solutions, syrups, elixirs, spirits, etc., are considered from this viewpoint.
304. **Pharmaceutical Technology III (5). Lec. 3, Lab. 6. Pr., PY 303.**
Continuation of PY 303 dealing with heterogeneous and plastic systems. Physical and chemical principles utilized in the study of the plastic and polyphasic dosage forms including ointments, creams, suspensions, colloids, mixtures, magmas, etc.
308. **Hospital Pharmacy (3). Pr., second professional year standing.**
The development of hospitals, their place in society, importance and place of pharmacy in hospitals, administrative and policy making aspects together with interdepartmental relationships. Field trips to representative hospital pharmacies.
- 308L. **Hospital Pharmacy Laboratory (1). Lab. 3. Pr., PY 304 and consent of instructor.**
Hospital pharmacy experience is obtained in the environment of participating hospitals. Students are expected to furnish transportation for this elective course.
400. **Dispensing Pharmacy I (5). Lec. 3, Lab. 6. Pr., PY 304.**
Compounding prescriptions of an elementary nature, illustrating virtually all types of prescriptions.
401. **Dispensing Pharmacy II (5). Lec. 3, Lab. 6. Pr., PY 400.**
Advanced dispensing pharmacy and prescription laboratory. Prescriptions of an advanced nature are compounded. Special attention is given to the subject of incompatibilities.
402. **Dispensing Pharmacy III (5). Lec. 3, Lab. 6. Coreq., PY 401.**
Practical pharmaceutical compounding and dispensing, related to modern drug outlets. Certain aspects of drug detailing will be discussed.

410. Advanced Pharmacy (5). Lec. 3, Lab. 6. Pr., PY 400 and second professional year standing.
The applications of modern pharmaceutical aids, such as surface active agents, the solubilizing agents and the complexing agents in compounding.
411. Elements of Pharmaceutical Manufacturing (5). Lec. 2, Lab. 9. Pr., PY 304, consent of instructor, and third professional year standing.
Manufacturing procedures, operation, and principles. In the laboratory selected pilot scale production problems are carried out to completion including control and testing of finished products.
412. Public and Professional Relations (3). Pr., second professional year standing.
413. Special Problems (1-8). Pr., second professional year standing.
414. Pharmaceutical Specialties (3). Pr., third professional year standing.
More important non-official specialties available to modern prescription practice and over-the-counter sales are studied.

COURSES FOR GRADUATE STUDENTS

601. Parenteral Preparations (5). Lec. 3, Lab. 6. Pr., PY 304 and consent of instructor.
Theory, preparation and testing of various medicinal preparations intended for injection into the body. Pharmaceutical principles are applied to problems of filtration, sterilization, isotonicity, hydrogen ion concentration and aseptic techniques.
602. Tablet Manufacture (5). Lec. 2, Lab. 9. Pr., PY 304.
Essentials in the manufacture, coating and evaluation of compressed tablets.
603. Product Development (5). Lec. 3, Lab. 6. Pr., PY 304.
Formulation, evaluation and control techniques as well as actual manufacture of products of pharmaceutical and cosmetic nature.
608. Biopharmaceutics (3). Lec. 2, Lab. 3. Pr., consent of instructor.
The relationship between some physical and chemical properties of drugs, their various dosage forms and subsequent biological effects.
609. Institutional Pharmacy (5). Lec. 4, Lab. 3. Pr., PY 401 and consent of instructor.
Comprehensive presentation of pharmacy in hospitals, nursing homes, etc., from the viewpoint of the administrative pharmacist. The responsibilities of the director of pharmacy service in a hospital. Field trips taken and a term project on a current aspect of Institutional Pharmacy is required.
680. Graduate Seminar (1). Pr., admission to Graduate School.
Required of all pharmacy graduate students each quarter.
695. Special Problems (2-5 hours). Pr., consent of instructor.
May repeat for a maximum of 8 hours.

Pharmaceutical Chemistry

201. Inorganic Pharmaceutical Chemistry (5). Pr., CH 105, CH 204.
Inorganic chemicals; their manufacture, chemical properties, pharmaceutical and therapeutic uses, doses and preparations. Tests for identity and purity, together with assay methods are considered.
203. Organic Pharmaceutical Chemistry (5). Pr., PY 201, CH 208.
Organic chemicals; their manufacture, chemical properties, trade names, pharmaceutical and therapeutic uses, doses and preparations.
302. Organic Pharmaceutical Chemistry (5). Pr., PY 203.
Continuation of PY 203.
305. Modern Methods of Drug Analysis (3). Lec. 2, Lab. 3. Pr., CH 208.
Theory and application of physical and chemical methods with special emphasis on the use of chromatography, instrumentation, and non-aqueous systems in the analysis of pharmaceutical products.
404. Chemistry of Natural Products (5). Pr., CH 302 and second professional year standing.
Chemistry and nomenclature of fatty oils, volatile oils, steroids, glycosides, alkaloids, antibiotics, vitamins, and other natural products.
421. Advanced Inorganic Pharmaceutical Chemistry (5). Pr., PY 201 and second professional year standing.
Modern structural concepts of atomic and molecular theory, and reaction mechanisms of inorganic chemicals of medicinal importance.

COURSES FOR GRADUATE STUDENTS

- 620-21-22. Chemistry of Synthetic Drugs (5-5-5). Pr., PY 302 or consent of instructor.
Historical background, pertinent literature, organic name reactions, nomenclature, relation of chemical structure and physical properties to biological activity, isosterism, metabolite antagonism, enzyme inhibition, an exhaustive consideration of the chemistry and biological activity of the various therapeutic classes.
- 623-24-25. Synthesis of Drugs (5-5-5). Lec. 2, Lab. 9. Coreq., PY 620-21-22 or consent of instructor.
The principles and techniques of analysis as applied to the various therapeutic classes.

- 626-27. **Analytical and Control Methods (5-5).** Lec. 3, Lab. 6. Pr., PY 305 or consent of instructor.
The principles and techniques of analysis as applied to the various therapeutic classes.
628. **Steroid Chemistry (5).** Pr., PY 620 or consent of instructor.
Structure, determination, chemistry, synthesis and structure relationships of steroids of pharmacological and pharmaceutical importance.
629. **Alkaloid Chemistry (5).** Pr., PY 620 or consent of instructor.
Structure determination, chemistry and synthesis of alkaloids with emphasis on the alkaloids of pharmacological and pharmaceutical importance.
660. **Heterocyclic Medicinal Chemistry (5).** Pr., consent of instructor.
The chemical nature and behavior of heterocyclic moieties which are either themselves of medicinal significance or are components possessing therapeutic properties.

Pharmacology-Toxicology

403. **Toxicology (5).** Pr., ZY 424, CH 208 and second professional year standing.
Fundamentals of the isolation, identification, symptoms and treatment of the more common poisons.
405. **Pharmacology I (5).** Lec. 4, Lab. 3. Pr., ZY 424, CH 302 and second professional year standing.
Absorption and fate, mechanism of action, pharmaco-chemical relationships and toxicology of the official and more important non-official drugs, with a brief coverage of pathological conditions which indicate specific uses in therapy.
406. **Pharmacology II (5).** Lec. 4, Lab. 3. Pr., ZY 424, CH 302 and second professional year standing.
Continuation of PY 405. Pharmacology of vitamins, hormones, biologicals and antibiotics with major emphasis on endocrine products and deficiency states as related to specific therapy.
407. **Chemotherapeutic Drugs (5).** Pr., CH 302, VM 204 and second professional year standing.
Structure-action relationship of drugs and their use in inhibiting or destroying micro-organisms.
428. **Public Health (5).** Pr., VM 200, VM 204 or VM 311 and second professional year standing.
Epidemiological study of diseases of man. A survey of the public health and preventive medicinal programs of federal, state, local and private agencies is included.
429. **Biochemical Pharmacology (3).** Lec. 1, Lab. 6. Pr., CH 302 and second professional year standing.
Application of biochemical principles and techniques in the study of mechanisms of drug action.
430. **Pharmacological Techniques (5).** Lec. 4, Lab. 3. Pr., ZY 424 and second professional year standing.
Principles and techniques of procedures used in drug evaluation in animal subjects.
431. **Cellular Pharmacology (5).** Lec. 4, Lab. 3. Pr., PY 405-6, second professional year standing.
Cytological basis of pharmacodynamics including metabolic energy transformation, protein synthesis, and cellular control systems as related to drug actions.
432. **Fundamentals of Bionucleonics (3).** Lec. 2, Lab. 3. Pr., PS 206 or consent of instructor and second professional year standing.
Theoretical and practical application of trace level radioactivity for research application to pharmacy and allied sciences.

COURSES FOR GRADUATE STUDENTS

630. **Toxicological Methods (3).** Lec. 1, Lab. 6. Pr., PY 403 or equivalent.
Techniques applied to the separation and chemical identification of the more common volatile, non-volatile organic and metallic poisons.
- 631-32. **Psychopharmacology (5-5).** Lec. 4, Lab. 3. - Lec. 3, Lab. 6. Pr., PY 431 for PY 631 and PG 320 or PG 445 for PY 632.
Effect of neurotropic and psychotropic agents upon reverberatory circuits, chemical transmitters, neural amines and metabolic energy systems; measures of rate of behavioral change; critique of behavioral screening techniques.
633. **Bioassay (5).** Lec. 4, Lab. 3. Pr., PY 430, MH 127 or an equivalent course in statistics.
Statistical basis for design of experiments and analysis of data in pharmacological quantitation.
637. **Pharmacology Seminar (3).** Pr., PY 430.
638. **Toxicology Seminar (1-3).** Pr., graduate standing.
Students are expected to present reviews of current literature and case histories. This will be followed with discussion by students and faculty.

650-51. Advanced Toxicology (5-5). Lec. 3, Lab. 6. Pr., PY 630 or equivalent.

The mechanism of action of poisons and antidotes, lethal doses and methods of detection and quantitation of poisons in tissues and body fluids. Practical application of analytic procedures and estimation of poisons in post-mortem and clinical specimens. The student will participate in a minimum of four post-mortem examinations with instructions in proper technique to obtaining specimens for toxicological analyses.

652. Forensic Toxicology (3). Pr., consent of instructor.

This course embraces a summary of medical jurisprudence including the laws governing the practice of forensic toxicology in criminal and civil prosecution. Collection, preservation and chain of evidence, and testimony in courts are stressed.

Pharmacognosy**306. Pharmacognosy I (5). Lec. 4, Lab. 3. Pr., BI 102, BI 103 and CH 207.**

Plant and animal drugs studied from a basic biological standpoint, including classification (taxonomy), morphology, histology, microscopy, biogeography and related features.

307. Pharmacognosy II (5). Lec. 4, Lab. 3. Pr., CH 302, PY 306.

Biochemical presentation of drugs of natural origin including morphology, histology, mode of production, medicinally active constituents, assays and applications.

440. Histology of Natural Products (3). Lec. 2, Lab. 4. Pr., consent of instructor and second professional year standing.

Micro-chemical, micro-analytical, and micro-sectioning techniques, including methods of fixation, dehydration, embedding and staining tissues in the preparation of permanent mounts of microslides, with use of microtome and micro-dissection techniques.

441. Commercial Pharmacognosy (3). Pr., consent of instructor.

Commercial aspects of crude drugs, both wild and cultivated, foreign and domestic; composition and application of pesticides.

COURSES PRIMARILY FOR GRADUATE STUDENTS**640. Advanced Pharmacognosy (5). Lec. 3, Lab. 6. Pr., PY 307 or equivalent.**

Comprehensive study of both official and unofficial crude drugs conducted macroscopically and microscopically; techniques of use of camera lucida, microtome and microphotographic equipment; pharmacognosy of previously undescribed drugs.

641. Advanced Microanalysis (5). Lec. 3, Lab. 6. Pr., consent of instructor.

Methods of microscopy and microchemistry of natural materials and compounds.

642. Histology of Medicinal Plants (5). Lec. 3, Lab. 6. Pr., PY 440.

Microscopic structure of medicinal plants in fresh or preserved state as related to the origin and fate of plant compounds.

699. Research and Thesis (5).**Pharmacy Administration****408. Pharmacy Management I (3). Pr., EC 200, ACF 211, PY 416.**

Elements of community pharmacy management, including location, layout organization, buying and stock control, advertisement, selling, merchandising, financial analysis, competitive practice, and socio-economic factors of modern Pharmacy.

409. Pharmaceutical Management II (3). Pr., PY 408.

A continuation of PY 408.

415. Pharmaceutical Jurisprudence (3). Pr., third professional year standing.

Legal aspects of pharmaceutical practice, giving primary consideration to State and Federal regulations bearing thereon.

416. Drug Marketing (3). Pr., EC 200, PY 101.

Basic principles of marketing drug products from the manufacturer to the consumer.

Philosophy (PA)

Professor Pauson, *Head*

Associate Professor Andelson

Assistant Professors Brown, Davis, McKown*, and Walters

Instructors Cornett and Digby

202. Ethics and Society (5).

A brief outline of the scope and methodology of social ethics, followed by a critical survey of some ethical systems.

210. Introduction to Philosophical Problems (3).

An introduction to the methods of philosophical inquiry and an examination of selected philosophical topics.

211. Introduction to Deductive Logic (3).

The analysis and criticism of arguments, the formation of principles of deduction and selected philosophical problems of logic.

*On leave, 1969-70.

212. **Introduction to Scientific Reasoning (3).**
Inductive techniques of hypothesis formation, and a discussion of such related problems in the theory of knowledge as perception, causation, and confirmation.
214. **Introduction to Ethics (3).**
An inquiry into and evaluation of types of ethical theory and schools of moral philosophy.
216. **Philosophies of Man (3).**
Fundamental conceptions of man emphasizing the recurring problems of human freedom, intelligence, immortality, and the relationship of man and woman in society.
220. **Eastern Religious Thought (3).**
Comparative study of Hinduism, Buddhism, Taoism, Confucianism, and Zen, with secondary emphasis on other Asian religions.
222. **Western Religious Thought (3).**
Comparative study of Judaism, Christianity, and Islam, with secondary emphasis on archaic Mediterranean religions.
330. **Philosophy of Religion (5).**
The philosophical investigation of such topics as the nature of religious language and religious knowledge, the existence of God, the human soul, and the problem of evil.
333. **Ancient Philosophy (5).**
From the Pre-Socratics through Plotinus, with emphasis on Plato and Aristotle.
370. **Symbolic Logic (5).**
Propositional logic through the logic of relations, and considerations of philosophical problems of formal logic.
380. **Pragmatism (5).**
Emphasis on Peirce, James, and Dewey. Some philosophical issues examined from a pragmatic viewpoint.
401. **Philosophy of Communism (5). Pr., junior standing.**
The theory, practice, and social motivation of Marxism, with some additional studies in peripheral areas.
402. **Existentialism (5). Pr., junior standing.**
Selected works of such authors as Kierkegaard, Nietzsche, Sartre, Jaspers, and Heidegger.
404. **Modern Ethical Theories (5). Pr., junior standing.**
Recent analyses of the meanings, presuppositions, and problems of ethical terms and judgments.
405. **Aesthetics (5). Pr., junior standing.**
Major aesthetic theories from Plato to modern thinkers.
412. **Medieval Philosophy (5). Pr., junior standing.**
The medieval philosophical world of Christianity, Islam, and Judaism.
413. **Phenomenology (5). Pr., junior standing. Alternate years.**
The phenomenological method and its application in the works of William James, Husserl, Heidegger, Sartre, and Merleau-Ponty.
415. **Philosophy of the Natural Sciences (5). Pr., junior standing.**
An analysis of such topics as empirical meaning, verifiability, measurement, probability, causality, and determinism.
417. **Philosophy of the Social Sciences (5). Pr., junior standing.**
The basic philosophical theories and fundamental presuppositions of the social sciences.
432. **Process Philosophy (5). Pr., junior standing. Alternate years.**
An examination of selected writings of Bergson, Peirce, James, and Whitehead.
455. **Metaphysics (5). Pr., junior standing.**
A critical analysis of such topics as monism and pluralism, freedom and determinism, realism and nominalism, and the mind-body problem.
460. **Epistemology (5). Pr., junior standing.**
The origin, nature, kinds, and validity of knowledge, with a consideration of faith, intuition, belief, opinion, certainty, and probability.
470. **Plato (5). Pr., junior standing.**
Plato's epistemology, metaphysics, ethics, and political theory; his relationship to Socratic method and thought.
475. **Aristotle (5). Pr., junior standing.**
Aristotle's epistemology, metaphysics, ethics, and psychology; his relationship to his predecessors, and his role in Western thought.
480. **Analytic Philosophy (5). Pr., junior standing. Alternate years.**
The development of philosophical analysis in the twentieth century from G. E. Moore through the Oxford analysts.
482. **British Empiricism (5). Pr., junior standing.**
Seventeenth and eighteenth century development of empiricism with emphasis on Locke, Berkeley, and Hume.
484. **Continental Rationalism (5). Pr., junior standing.**
The works of Descartes, Spinoza, and Leibniz.
490. **Kant (5). Pr., junior standing.**
Kant's critical philosophy, with special emphasis on his epistemology, ethics, and metaphysics.

492. Philosophy of Law (5). Pr., junior standing. Alternate years.

The nature and function of law, including such topics as judicial reasoning, the ground of authority, natural law, legal responsibility, punishment, civil disobedience, and the relation of law to ethics and the behavioral sciences.

498-499. Readings for Honors (5-5). Pr., junior standing, a 2.5 average in relevant prior work either in philosophy or in related areas and consent of department head and instructor.

Specific reading programs may be developed which pertain to a particular philosopher, period or problem. An honors paper and an examination will be expected.

650. Seminar (5). Pr., consent of instructor.

The content will change for each quarter in any one calendar year. This will vary from movements of thought to an intensive study of one of the great thinkers such as Plato or Whitehead.

Physical Science (PHS)

Professor Kosolapoff
Assistant Professor Ward

100. Physical Science I (5). Lec. 4, Lab. 2. Open only to students in elementary education.

A historical approach to the development of modern science and the practices of modern technology intended to give the education student a broad acquaintance with and understanding of the ideas and methods of the physical sciences.

101. Physical Science II (5). Lec. 4, Lab. 2.

A continuation of PHS 100.

Physics (PS)

Professors Carr, *Head*, Alford and Hughes*
Associate Research Professor Fromhold
Associate Research Professor Budenstein

Associate Professors Andrews, Askew, French, Kinzer, Latimer, Mowat, and Sparks
Assistant Professors Butler, Durham, Harlan, Thaxton, and Ward
Instructors Horton and Forsythe

204. Foundations of Physics (5). Credit in PS 220 and 205 excludes credit for this course.

The basic principles of mechanics, heat, light, sound, electricity and magnetism and selected topics. For students in aeronautical administration, agricultural and industrial arts education, industrial design, and home economics.

205. Introductory Physics—Mechanics, Heat and Sound (5). Lec. 4, Lab. 3. Pr., MH 160.

The first half of a two-quarter course in the fundamentals of physics. The quantitative as well as the qualitative aspects of the subject are stressed. For students in architecture, forestry, laboratory technology, pharmacy, pre-dentistry, pre-medicine, pre-veterinary medicine, industrial management, textile science in home economics, and arts and sciences. The weekly three-hour laboratory periods are devoted to the performance of appropriate experiments.

206. Introductory Physics—Electricity and Light (5). Lec. 4, Lab. 3. Pr., PS 205. Continuation of PS 205.**210. Principles of Modern Physics (5). Lec. 4, Lab. 3. Pr., PS 206.**

The fundamental principles of physics to current topics. Lecture discussions are extended and supplemented by laboratory experience. Subjects include relativity, atomic and nuclear phenomena, and radiation.

217. Astronomy (3). General elective.

Descriptive astronomy, accompanied by occasional observations of the heavenly bodies with a three-inch refracting telescope.

220. General Physics I (4). Lec. 3, Lab. 3. Pr., MH 163 (or concurrently).

Mechanics and heat. PS 220-221-222 comprise a three-quarter sequence using calculus wherein a number of topics are discussed in depth. The sequence is intended to serve as a foundation for students in the mathematics, science, and engineering curricula.

221. General Physics II (4). Lec. 3, Lab. 3. Pr., PS 220; MH 264 (or concurrently). Wave motion, sound, and optics.**222. General Physics III (4). Lec. 3, Lab. 3. Pr., PS 221.**

Electricity and magnetism.

300-301. Intermediate Electricity and Magnetism I and II (4-4). Lec. 3, Lab. 3. Pr., PS 222, PS 210, or PS 320; MH 401.

Development and application of Maxwell's equations. Topics include: AC circuits; electromagnetic measurements; laws of Gauss, Ampere, and Faraday; electric and magnetic properties of matter; and electromagnetic wave propagation.

*Retirement effective June 30, 1970.

302. **Electronics (5).** Lec. 4, Lab. 3. Pr., PS 222, MH 264.
Review of AC and DC circuits; theory of vacuum tubes and semiconductors; diodes as rectifiers and regulators; tube and transistor voltage and power amplifiers; feedback amplifiers and oscillators; pulse and digital circuits. Appropriate laboratory exercises form a part of the course.
303. **Optics (5).** Lec. 4, Lab. 3. Pr., PS 221, MH 264.
Intermediate course in physical optics comprising wave motion, reflection, refraction, dispersion, origin of spectra, interference, diffraction, and polarization, with appropriate laboratory experiments.
304. **Applied Spectroscopy (5).** Lec. 4, Lab. 3. Pr., PS 222, MH 163.
The more important concepts of the origin of spectra; a study of instruments and techniques of practical spectroscopy. Laboratory experiments designed to give students in both chemistry and physics a working knowledge of spectroscopy as a tool.
305. **Introduction to Modern Physics (5).** Lec. 4, Lab. 3. Pr., PS 222, MH 264.
Selected topics of modern physics, including atomic structure, nuclear structure, wave-particle dualism, and special relativity.
320. **Modern Physics for Engineers (3).** Lec. 3. Pr., PS 222, MH 264.
Introduction to modern physics, including special relativity, Schrodinger wave mechanics, atomic and nuclear systems, elementary particles.
330. **Fundamentals of Physics (10).** Demonstration lecture 3, lecture-recitation 7, laboratory 4, seminar 1. Pr., MH 160 (or concurrently). Offered Summer only by special arrangement.
Use of PSSC materials in which the fundamental principles of optics, mechanics, electricity and magnetism are stressed. For secondary school physics teachers with a limited background in physics who are enrolled in the Physics Summer Institute.
340. **Intermediate Mechanics (3).** Pr., PS 221, MH 265.
Selected topics in mechanics including vector and coordinate kinematics and dynamics; free and driven damped harmonic oscillator; generalized coordinates and an introduction to LaGrange's equations.
401. **Theoretical Physics I—Mechanics (5).** Lec. 4, Prob. 2. Pr., junior standing, PS 222, MH 361.
Newton's laws; systems of particles; conservation laws; free, damped, and forced oscillations; introduction to calculus of variations.
402. **Theoretical Physics II—Mechanics Continued (5).** Lec. 4, Prob. 2. Pr., junior standing, PS 401.
Calculus of variations; Hamilton's principle and LaGrange's equations; vibrating systems; vector analysis; dynamics of rigid bodies.
403. **Theoretical Physics III (5).** Lec. 4, Prob. 2. Pr., 301, PS 402, junior standing.
Introduction to electromagnetic theory using the mathematics of vector fields. The physical interpretation of the different fields is stressed.
404. **Thermodynamics (5).** Pr., junior standing, PS 305, MH 362.
Equations of state. First and second laws of thermodynamics. The absolute temperature scale; the entropy, free energy, and Gibbs potential; general conditions of equilibrium. Application to reactions in gases and dilute solutions. Nernst's postulate.
405. **Nuclear Physics (5).** Lec. 4, Lab. 3. Pr., junior standing, PS 305, MH 264.
Nuclear radiations; transmutations; natural and artificial radioactivity; binding energy; nuclear forces; structure of the nucleus; nuclear fission and its applications. Appropriate laboratory experiments form a part of the course.
406. **Advanced Laboratory I (2).** Lab. 6. Pr., PS 301 or 302, 305, junior standing.
Research oriented experiments will be selected in the areas of biophysics, plasmas, low temperature, high vacuum, wave propagation, nuclear and atomic spectroscopy, Mossbauer effect, nuclear magnetic resonance, transport in solids, Hall effect, mass spectrometry, advanced electronics, and other areas of current interest in research.
407. **Advanced Laboratory II (2).** Lab. 6. Pr., PS 406.
A continuation of PS 406.
408. **Advanced Laboratory III (2).** Lab. 6. Pr., PS 407.
A continuation of PS 407.
409. **Introduction to Reactor Physics I (5).** Lec. 4, Lab. 3. Pr., junior standing, PS 305, PS 405, MH 362, or consent of instructor.
Brief account of nuclear physics; basic instrumentation; interaction of neutrons with matter; chain reactions; neutron diffusion; the bare homogeneous thermal reactor; lattice constants; reactor kinetics.
410. **Introduction to Reactor Physics II (5).** Lec. 4, Lab. 3. Pr., junior standing, PS 409.
Homogeneous reactor with reflector; reactor control; power reactors; thermal aspects of reactor systems; design variables; radiation detection and measurement; shielding; radiation hazards.
412. **Seminar in Modern Physics (1).** Pr., senior standing.
Library search, written reports, and oral presentation of a pertinent topic in modern physics.

413. **Introduction to X-ray Crystallography (5).** Lec. 4, Lab. 3. Pr., junior standing, PS 305, or consent of instructor.
Principles of crystallography, properties of X-rays, Laue and powder techniques, applications to crystal structure and grain size.
414. **Electron Optics and Microscopy (5).** Lec. 3, Lab. 6. Pr., junior standing and PS 222 and MH 264.
Electron optics; theory and operation of the electron microscope; techniques of mounting, replication and shadowing of specimen; electron diffraction, theory and interpretation of patterns.
- 415-416. **Intermediate Modern Physics I and II (5-5).** Pr., junior standing and MH 265.
Special theory of relativity; introductory quantum mechanics with applications to microscopic systems; Fermi-Dirac, Bose-Einstein statistics; and electronic bands in solids.
417. **Introduction to Biophysics (5).** Pr., consent of instructor, junior standing.
The physics of biological systems, with emphasis on the cellular and subcellular levels; effects of light and high energy radiations, bio-electric phenomena, bio-energetics, etc.
419. **Scientific Instrumentation (3).** Lec. 2, Lab. 3. Pr., junior standing; PS 206; MH 162; and consent of instructor.
For advanced undergraduates and graduate students in the natural sciences. The course is directed to the selection and use of equipment normally used for lab experimentation in the scientific fields. Pertinent laboratory experiments will accompany the course.
421. **Modern Electronics (5).** Lec. 3, Lab. 6. Pr., PS 302 and junior standing.
Network theory and digital logic; state-of-the-art electronic devices; operational amplifiers; linear and digital integrated circuits; servo systems; selected topics in modern instrumentation.
435. **Introduction to Solid State Physics (5).** Pr., MH 361, junior standing.
Solid state phenomena including lattice vibrations, band description of electronic states in metals, semiconductors and insulators, and magnetic phenomena.
470. **Health Physics (5).** Lec. 4, Lab. 3. Pr., consent of instructor, junior standing.
Fundamental principles of radioactivity; instrumentation for detecting and monitoring radioactive nuclides; radiation effects on man; permissible radiation dosages; safe handling of radioactive substances; and shielding from various radiations.

GRADUATE COURSES

601. **Advanced Dynamics I (3).** Pr., PS 402.
D'Alembert's principle; introduction to the calculus of variation; Hamilton's principle and Hamilton's equations; principle of least action.
602. **Advanced Dynamics II (3).** Pr., PS 601.
Canonical variables and contact transformations; the Hamilton-Jacobi equation; action; angle variables; Poisson brackets; continuous systems.
603. **Mechanics of Continuous Media (3).** Pr., PS 602.
Introduction to theories of elasticity and fluids.
- 604-605-606. **Theory of Electricity and Magnetism I-II-III (3-3-3).** Pr., PS 403, Coreq., MH 607-608-609.
Maxwell's formulation of classical electromagnetic theory. Includes electrostatics, magnetostatics, potential problems, electric currents, Maxwell's equations, electromagnetic waves, radiation theory, boundary value problems.
607. **Physical Optics (3).** Pr., PS 606.
Application of Maxwell's equations to optical phenomena including Kirchhoff's formulation, propagation of electromagnetic waves in anisotropic media, double refraction, dispersion.
611. **Plasma Physics I (3).** Pr., PS 301, PS 402, or consent of instructor.
Orbit theory, fluid model, Alfvén waves, plasma stability, and plasma radiations.
612. **Plasma Physics II (3).** Pr., PS 611 or consent of instructor.
Theory of plasma waves, shocks, instabilities, and magneto-hydrodynamics.
628. **Statistical Mechanics I (3).** Pr., PS 404, 601.
Statistical ensembles in classical mechanics, the Maxwell-Boltzmann distribution law, Boltzmann's H-theorem, and an introduction to quantum statistical mechanics.
629. **Statistical Mechanics II (3).** Pr., PS 628.
Quantum mechanical H-theorem, applications, introduction to non-equilibrium statistical mechanics.
630. **Modern Physics for High School Teachers (5).** Lec. 4, Lab. 3. Pr., junior standing, PS 431 or equivalent, MH 487 or equivalent.
Physics since 1890 including: structure of matter; atomic and molecular spectra; X-rays, natural and induced radioactivity; nuclear fission and fusion; and cosmic rays.
632. **Special Theory of Relativity (3).** Pr., PS 602, PS 605.
Relativistic mechanics, covariant formulation of Maxwell's field equations, LaGrangian and Hamiltonian formulation of fields.
635. **Solid State Physics I (3).** Pr., PS 435, PS 643.
Electrons in a perfect crystal lattice, quantum mechanical formulations of the many body problem, molecular bonding, description of the symmetry properties of solids.

636. **Solid State Physics II (3).** Pr., PS 635.
Brillouin Zones, cohesive energy, interaction of electrons with electromagnetic radiation interactions between electrons and the crystal lattice.
637. **Solid State Physics III (3).** Pr., PS 636.
Magnetic properties of solids; para-, dia-, ferro-, and antiferromagnetic effects. Resonance experiments, optical properties of solids.
639. **Directed Reading in Physics (2).** Pr., consent of instructor. May be repeated for credit.
641. **Quantum Mechanics I (3).** Pr., PS 402.
Action principle; Schrodinger's equation; operator formalism; bound state problems; angular momentum.
642. **Quantum Mechanics II (3).** Pr., PS 641.
Transformation theory; perturbation calculations; particle in electromagnetic field; radiative transitions.
643. **Quantum Mechanics III (3).** Pr., PS 642.
Scattering theory; S matrix; identical particles; applications.
- 644-645. **Advanced Quantum Mechanics I-II (3-3).** Pr., PS 632, or PS 643.
Dirac electron; field quantization; interactions; Feynmann diagrams; dispersion relations.
653. **Seminar in Physics (2).** Pr., consent of instructor. May be repeated for credit.
655. **Special Topics in Theoretical Physics (3).** Pr., consent of instructor. May be repeated for credit.
Choice of topic will vary but will include: relativity theory; group theory; atomic and molecular structure; elasticity; fluid mechanics; quantum field theory; low temperature physics.
661. **Nuclear Structure (3).** Pr., PS 405, PS 643.
Selected topics on properties of nuclei.
662. **Nuclear Processes (3).** Pr., PS 661.
Radioactive decay, nuclear reactions.
- 671-672. **Advanced Solid State Theory I and II (3-3).** Pr., PS 637.
Quantum field theory methods of solving the many-body problem, second quantization, statistical mechanics in occupation number formalism, Feynmann diagrams and infinite-order perturbation theory, Green's function propagators, "dressed" interactions and quasi-particles, many-body effects in metals, Fermi liquid theory, present-day theories of super-conductivity, ferromagnetism, and other cooperative phenomena.
691. **Directed Reading in Contemporary Physics.** (Credit to be arranged.) Pr., completion of 30 hours of advanced courses in physics. May be repeated for credit.
699. **Research and Thesis.** (Credit to be arranged.)
799. **Research and Dissertation.** (Credit to be arranged.)

Political Science (PO)

Professors Fortenberry, Head, Boyne, Hayhurst, and Hobbs
Associate Professors Dickson, Johnson* and Walkin
Assistant Professors McNorton, Metzger, and Pickering
Instructors Campbell, Latimer, and Nelson

209. **Introduction to American Government (5).**
Constitutional principles; federalism; elections and public opinion; legislative, executive, and judicial departments; principal functions.
210. **American State and Local Government (5).**
State constitutional principles; organization and functions of state government; national-state and state-local relations; special attention to Alabama government.
309. **Introduction to International Relations (5).** Pr., sophomore standing.
International relations, including a consideration of the bases of national power and the rudiments of international politics.
311. **International Organization (5).** Pr., sophomore standing.
The evolution of international organization from the beginning through the United Nations.
312. **Introduction to Comparative Government and Politics (5).** Pr., sophomore standing.
Methods of classifying governments by institutional and developmental characteristics. A review of the forces which create political stability and instability, democracy and dictatorship, contemporary political systems in selected countries will be used for comparison.
314. **American Foreign Policy (5).** Pr., junior standing.
An analysis of American foreign policy decision making and practices with special emphasis on (1) recent and contemporary trends and developments and (2) the economic aspects of international politics.

*Retirement effective March 19, 1970.

315. **American Political Thought (5). Pr., junior standing.**
The principal American political philosophers and philosophies and their influence on political institutions.
323. **Municipal Government in the United States (5). Pr., sophomore standing.**
Functions of city government, relation of city to state; electorate, party system and popular control; forms of government; administrative organization; some reference to Alabama.
325. **Introduction to Public Administration (5). Pr., sophomore standing.**
Study of organization, development, procedures, process, and human factors involved in administration in a political environment.
327. **Policy and Administration (5). Pr., sophomore standing.**
Resources in the American economy; consideration of constitutional, political and geographic factors in the development of resources; policy; organization, procedures, and programs for administration and development of natural resources.
328. **Government and the Economy (3).**
An examination of constitutional and political bases of governmental action; the origin and evolution of policies; relationships between political and economic institutions; and the consequences of governmental action or inaction.
329. **The Executive (3). Pr., sophomore standing.**
The American presidency and state governorships with a view toward analyzing the political dynamics of chief executives and their relationships to the competitive branches and units of government within the American political system.
331. **The Legislative Process (3). Pr., PO 209 or 210 and sophomore standing.**
The principles, procedures, and problems of lawmaking in the United States; special attention to Congress and the state legislatures.
332. **The Judicial Process (3). Pr., sophomore standing.**
The role of the courts, the nature of jurisprudence; comparative legal systems; the origin of law; and the concept of legality.
340. **Political Parties and Politics (5). Pr., PO 209 and sophomore standing.**
The nature, organization, and operation of political parties in the United States; the suffrage; nominating and electoral processes; importance and nature of interest groups.
344. **Scope and Methods of Political Science (3).**
Fields of specialization in political science; concepts and techniques of political science research; trends in the discipline.
360. **Survey of Law Enforcement (5).**
Introduction to the philosophical and historical backgrounds; agencies and processes; purposes and functions; administration and technical problems; career orientation.
362. **Criminal Investigation (5).**
Criminal investigation procedures, including theory of investigation, case preparation, specific techniques for selected offenses, questioning of suspects and witnesses, and problems in criminal investigation.
401. **American Constitutional Law I (5). Pr., junior standing.**
The Constitution of the United States on the basis of the decisions and opinions of the Supreme Court defining judicial review, the relationship of the executive, legislative, and judicial branches of the national government, and the federal system.
402. **American Constitutional Law II (5). Pr., junior standing.**
The Constitution of the United States on the basis of the leading decisions and opinions of the Supreme Court defining civil rights in relation to both national and state governments.
405. **Metropolitan Area Governmental Problems (3). Pr., junior standing.**
Political, governmental, and administrative organization and actions in urban areas with many governmental entities; governmental problems resulting from urbanization and possible solutions.
415. **Public Personnel Administration (3). Pr., junior standing.**
Personnel policies and processes of national, state and local governments. The role of politics in public personnel management.
418. **Administrative Law (3). Pr., junior standing.**
General nature of administrative law; types of administrative action and enforcement; analysis of rule-making and adjudication; administrative due process; judicial review. Case method.
419. **Southern Politics (3). PO 209 and 210 and junior standing.**
Regional politics emphasizing case studies, voting patterns, political strategy, current political groups and factionalism, taught from the viewpoint of political science rather than history.
420. **Political Thought Before the Nineteenth Century (5). Pr., junior standing.**
The development of political thought from the Greeks to 1800; attention to the philosophers and the early theories that are found in modern political institutions.
422. **Recent and Contemporary Political Theory (5). Pr., junior standing.**
The political theories of the nineteenth and twentieth centuries; analysis and comparison of modern ideologies.
423. **Communist Theory and Practice (3). Pr., junior standing.**
Marxist ideology as modified by Lenin, with illustrations of actual practice drawn from all sides of the communist world.

426. **Governments of Western Europe (5). Pr., junior standing.**
Descriptions and analyses of the principal political structures and power systems of Western Europe with particular emphasis upon Great Britain, France, and Germany.
428. **Government and Politics of the Near East (5). Pr., junior standing.**
The political environment, institutions, and processes of the Near East countries, radicalism and conservatism in the area, the Arab-Israeli conflict, and major power interests.
431. **National Security and Foreign Policy (4). Pr., junior standing.**
The role of force as an instrument of foreign policy, security considerations and their relationships to policy; the impact of technological innovation; collective security and arms control; internal issues affecting national security; primary emphasis on U. S. security concepts and strategies and problems to which they give rise.
433. **Government and Politics of the Far East (5). Pr., junior standing.**
The political environment, institutions, and processes of the Far East, with emphasis on China and Japan; also foreign relations of the area including Great Power interests.
434. **Government and Politics of Africa (5). Pr., junior standing.**
The political environment, institutions, and processes of the African countries south of the Sahara, the colonial heritage, problems of tribalism, stability, and politico/economic development, with special attention to selected countries.
435. **Contemporary International Politics (5). Pr., junior standing.**
A survey of the conflicts of national interests in contemporary international politics with special emphasis on the efforts to resolve these issues through diplomacy. This course will give students the opportunity to apply their academic training to an analysis of actual contemporary international issues.
436. **Government and Politics of the Soviet Union (5). Pr., junior standing.**
A study of the present status of the Soviet totalitarian system with attention to its origin, the essentials of the Stalinist pattern, the post-Stalinist political dynamics, and the nature and significance of contemporary changes.
437. **Soviet Foreign Policy (5). Pr., junior standing.**
The factors affecting Soviet foreign policy decision making with special emphasis on (1) theory and practice of world communism, and (2) the techniques of Soviet penetration in foreign areas.
438. **Government and Politics of Eastern Europe (5). Pr., junior standing.**
A comparative study of the political institutions of the Eastern European Communist states, emphasizing especially those features which diverge the most from the totalitarian pattern of the Stalinist era. Attention will also be given to the foreign relations of the Eastern European powers, including those with the Soviet Union and Communist China.
439. **Government and Politics of Latin America (5). Pr., junior standing.**
The political environment, institutions, and processes of Latin America with emphasis on dynamic factors that influence the degree of democracy and authoritarianism, stability and instability, and politico/economic development in the area.
440. **International Law (5). Pr., junior standing.**
The origin and development of international law with special emphasis on recent and current developments—trends.
445. **The Government and Politics of the Developing Nations (5). Pr., junior standing.**
The problems involved in creating stable political systems in underdeveloped and recently colonial countries. Selected countries of this type will be used for comparison.
450. **Political Internship (2-5).**
Fellowship or other practical political experience in executive, legislative, or judicial offices of government, or related political activities arranged and approved by the department head.
460. **Survey of Criminalistics (5). Not open to graduate students.**
Survey of scientific crime detection methods: crime scene search, identification and preservation of evidence; lie detection, *modus operandi*; fingerprint identification, and related subjects.
462. **Police Administration and Organization (5). Not open to graduate students.**
Principles of organization and administration in law enforcement; functions and activities; planning and research; community relations; personnel and training; inspection and control; policy formulation.
464. **Internship in Law Enforcement (5). Pr., consent of department head. Not open to graduate students.**
Internship in an approved law enforcement or correctional agency under supervision of the agency concerned. Written reports on internship required.

GRADUATE COURSES

611. **Seminar in American Government (3-5).**
A systematic examination of functions, problems, and issues within the political and constitutional framework of selected areas of American government.
613. **Seminar in State and Local Government (3-5).**
A systematic examination of functions, problems, and issues within the political and constitutional framework of selected areas of state and local government. Some attention will be given to Alabama.

625. **Seminar in Political Parties, Pressure Groups and Political Issues in the United States (5).** Pr., junior standing.
The interaction of political parties, pressure groups and the general public as a determinant in resolving political issues.
635. **Seminar in Public Administration (5).**
Various processes, functions, theories, practices and systems as treated in the literature of public administration.
645. **Seminar in Comparative Government (5).**
The major institutions, functions, and problems of representative political systems. Includes the methodology and bibliography of comparative government and politics.
655. **Seminar in International Relations (5).**
The basic literature of the field of International Relations with special emphasis on the critical evaluation of this material.
665. **Seminar in Political Theory (3-5).**
The problems of scope and methods of inquiry in the fields of political theory with intensive research in selected topics.
675. **Seminar in Constitutional Law (5).**
Selected areas of constitutional law with readings in depth in relevant cases and constitutional theory.
699. **Research and Thesis. (Credit to be arranged.)**

READING COURSES

The following directed reading and research courses are offered on a demand basis to enable graduate students to pursue specialized topics and are rigorously supervised by professors in each field. Registration is by permission of the department and the major professor.

617. **Reading Course in American Government (3-5).**
627. **Reading Course in Public Law (3-5).**
637. **Reading Course in Public Administration (3-5).**
647. **Reading Course in Comparative Government (3-5).**
657. **Reading Course in International Relations (3-5).**
667. **Reading Course in Political Theory (3-5).**

Poultry Science (PH)

Professors Moore, *Head*, Cottier, Edgar, and Mora
Associate Professors Goodman, Johnson, and McDaniel
Assistant Professor Brewer

301. **General Poultry Husbandry (5).** Lec. 4, Lab. 2. Fall, Winter, Spring, Summer.
Principles of poultry production and their application to general farm conditions, including breeding, feeding, housing, diseases, and culling.
302. **Poultry Meat Production (3).** Lec. 2, Lab. 2. Fall. Pr., PH 301.
Practical problems involved in raising broilers, capons, and turkeys for meat production.
404. **Poultry Management (5).** Lec. 4, Lab. 2. Spring. Pr., PH 301 and junior standing.
Poultry problems and management of commercial flocks.
405. **Poultry Feeding (3).** Fall. Pr., PH 301 and junior standing.
Composition and use of poultry feeds in connection with the demands for growth, body maintenance, and egg production.
406. **Incubation and Brooding (3).** Lec. 2, Lab. 2. Winter. Pr., PH 301 and junior standing.
Embryology of the chick, theory and practice of incubation and brooding.
- 407-09. **Poultry Problems (3-3).** Lec. 1, Lab. 4. Pr., 12 hours PH courses and junior standing. All quarters.
Investigation on some phase of poultry work.
408. **Poultry Diseases and Parasites (5).** Lec. 4, Lab. 2. Winter. Pr., PH 301 and junior standing.
Prevention, diagnosis, control, and treatment of the common diseases and parasites of poultry, designed especially for Agriculture students.
410. **Poultry Breeding (3).** Lec. 3. Spring. Pr., PH 301, ZY 300, and junior standing.
Physiology of reproduction and inheritance of various poultry characters responsible for efficient egg and meat production and low mortality.
411. **Poultry Marketing (3).** Lec. 2, Lab. 2. Spring. Pr., PH 301 and junior standing.
Grading eggs and poultry and study of problems of poultry marketing.

414. **Environmental Physiology and Bioengineering (5).** Lec. 3, Lab. 4. Winter. Pr., ZY 424 or AN 302 or equivalent; senior standing; and consent of instructors. Practices and theories of environmental engineering and science directly applicable to animal environments. Physiological responses of animals to various environmental parameters.
422. **Avian Diseases (5).** Lec. 4, Lab. 2. Fall. Diagnosis, treatment, and prevention of infectious and parasitic diseases. Clinical and autopsy demonstrations are performed during laboratory periods. (For Veterinary students only.)

GRADUATE COURSES

604. **Advanced Poultry Production (5).** Lec. 5. Spring. Advanced studies on various phases of poultry production.
606. **Advanced Poultry Breeding (5).** Lec. 4, Lab. 2. Fall. Advanced studies of the principles of heredity as applied to poultry breeding.
607. **Advanced Poultry Problems (2 to 5).** All quarters. (May be taken more than once to a maximum of 5 hrs.) Assigned problems.
608. **Seminar. Credit to be arranged.** Fall, Spring, Winter, Summer. Literature in Poultry Husbandry and other fields related to poultry. Emphasis will be given to the preparation, organization and presentation of research material by students and to reporting of current literature in the field. Designed for seniors in Poultry or Animal Husbandry as well as graduate students.
610. **Advanced Poultry Nutrition (5).** Lec. 5. Summer. Advanced study of the nutrients, their function and the nutritional requirements of poultry.
611. **Advanced Poultry Management (5).** Lec. 5. Summer. Advanced study of the principles of management of commercial poultry flocks.
612. **Advanced Poultry Diseases (5).** Lec. 1, Lab. 8. Spring. Pr., PH 408 or consent of instructor. Isolation, cultivation, and identification of bacterial, fungal, and viral agents. Emphasis on biochemical aspects of microbial and nutritional diseases and the mechanisms of the immune response.
613. **Advanced Poultry Diseases (5).** Lec. 1, Lab. 8. Summer. Pr., VM 418 and PH 612, or equivalent. Continuation of PH 612 with emphasis on those disease conditions caused by protozoa, helminths, and arthropods and the gross and histopathology of diseases studied in both quarters.
614. **Immunochemistry (5).** Lec. 3, Lab. 4. Fall. Pr., general bacteriology, immunology and organic or biochemistry. Advanced study of the fundamental principles of immunology including specificity, antibody synthesis and the thermodynamics of antigen-antibody reactions. Laboratory will include the use of immunodiffusion, immunoelectrophoresis, fluorescent-antibody technique and quantitation of the precipitin reaction.
615. **Avian Physiology (5).** Lec. 2, Lab. 6. Winter. Pr., ZY 424 and organic chemistry. General physiology of birds with particular reference to domesticated species.
618. **Experimental Virology (5).** Lec. 3, Lab. 4. Winter. Pr., VM 461, VM 495, CH 208, CH 420 or equivalent and permission of instructor. Advanced study of fundamental properties of plant, animal and bacterial viruses including biochemical and biophysical properties and mechanisms of infection. Laboratory includes isolation, purification and fractionation of viruses; identification of anti-viral agents using in vitro systems.
699. **Research and Thesis. (Credit to be arranged.)** All quarters. Technical laboratory problems related to poultry.
799. **Doctoral Research and Dissertation. (Credit to be arranged.)** All quarters.

Psychology (PG)

Professors Spears, Head, Foshee, Jenkins, Lair, and McIntyre
Associate Research Professor Cahoon
Associate Professors Irvine, Moon, Turner, and Vallery
Assistant Professor Hughes
Instructor Troelstrup
Research Lecturer McKee

211. **Psychology I (3).** Human behavior emphasizing principles of learning, perception, and motivation.
212. **Psychology II (3).** Pr., PG 211. Continuation of PG 211 emphasizing the development of human behavior.
215. **Quantitative Methods (5).** Lec. 3, Lab. 4. Pr., MH 161, PG 211. Introduction to the measurement of behavior and to quantitative methods of data analysis.

320. **Experimental Psychology I: Learning (4).** Lec. 3, Lab. 3. Pr., PG 212, 215 (PG 215 may be taken concurrently).
Experimental analysis of behavior modification emphasizing problems, concepts, and methods.
321. **Experimental Psychology II: Perception (4).** Lec. 3, Lab. 3. Pr., PG 212, 215 (PG 215 may be taken concurrently).
Discrimination, generalization, and their physical and physiological correlates.
322. **Experimental Psychology III: Personality (4).** Lec. 3, Lab. 3. Pr., PG 320.
Motivation, cognitive processes, and adaptive behavior.
330. **Social Psychology (4).** Lec. 3, Lab. 2. Pr., PG 212 or SY 203.
Analysis of social behavior including roles, group identification, attitudes, and conflicts among these.
350. **Behavior Modification in Early Childhood (5).** Lec. 3, Lab. 4. Pr., departmental approval.
Application of learning principles to the modification of behavior in the preschool child. Laboratory practice will supplement classroom discussion.
360. **Fields of Professional Psychology (5).**
Contributions of psychology to medicine, education, law, and human engineering in industry. Not open to students majoring in Psychology.
415. **Psychological Testing (5).** Pr., junior standing and PG 322, or departmental approval.
Theory of psychological testing with application to the measurement of aptitudes and various aspects of personality.
430. **Perception (4).** Pr., junior standing and PG 321, PG 322 or departmental approval.
Theories of perception, emphasizing both general and individual factors that influence meaning.
431. **Social Psychology (5).** Pr., 15 hours of psychology and junior standing.
Theories of social behavior; processes of social influence; group structure and dynamics; influence of basic psychological processes on social behavior.
433. **Personality (4).** Pr., junior standing and PG 322 or departmental approval.
Objective, phenomenological, and psychoanalytic theories of personality.
435. **Behavior Pathology (4).** Pr., junior standing and PG 322 or departmental approval.
Types of abnormal behavior and their social and biological origins.
440. **Physiological Psychology (5).** Pr., junior standing and 20 hours of biological sciences, or departmental approval.
The physiological correlates of behavior, including sensory and response mechanisms, with special emphasis on central nervous system function.
445. **Animal Behavior (5).** Pr., junior standing and 20 hours of biological sciences, or departmental approval.
Analysis of unlearned and learned animal behavior and its evolutionary development, integrating the contributions of ethological and behavioristic research.
450. **Learning (4).** Pr., junior standing and PG 320 or departmental approval.
Theories of learning and their logical and empirical foundations.
461. **Industrial Psychology (5).** Pr., junior standing.
The uses of psychology in business and industry.
462. **Training and Supervision of Industrial Personnel (3).** Pr., junior standing.
Application of the principles of learning to the training of factory, office, and sales employees.
463. **Interviewing and Classifying Industrial Personnel (3).** Pr., junior standing.
Principles and practices in interviewing.
480. **History of Psychology (4).** Pr., junior standing and 20 hours of psychology or departmental approval.
Evolution of psychology from physics, physiology, and philosophy to a science of behavior.
490. **Special Problems in Psychology (3-8).** Pr., junior standing, departmental approval. May be repeated for a maximum of 8 credit hours.
An individual problems course. Each student will work under the direction of a staff member on some experimental or theoretical problem of mutual interest.

GRADUATE COURSES

- 600-601. **Behavior Theory I, II (5-5).** Pr., 20 hours of experimental and theoretical psychology and departmental approval; 600 for 601.
Survey of current theory in psychology and introduction to theory construction.

611. **Theory of Measurement (5).** Pr., PG 415, PG 625, and departmental approval. Statistical theory of error and true values; scaling methods.
620. **Experimental Psychology I: Learning (5).** Lec. 3, Lab. 6. Pr., PG 215 and PG 320 or PG 450.
Analysis of learning stressing experimental methodologies illustrative of major theoretical approaches.
621. **Experimental Psychology II: Psychophysics (5).** Lec. 3, Lab. 6. Pr., 20 hours of experimental and theoretical psychology.
Physiology of receptor function and methodologies relating physical properties of stimulation to subject response variables.
622. **Experimental Psychology III: Personality—Social (5).** Lec. 3, Lab. 6. Pr., PG 601.
Experimental studies of complex processes in humans.
623. **Analysis of Behavior (5).** Lec. 2, Lab. 10. Pr., PG 620.
Methods and concepts of operant conditioning research with animals and humans stressing current research and literature.
625. **Experimental Design I (5).** Pr., PG 215 and PG 320.
Analysis of variance, expected mean squares, and correlation methods.
626. **Experimental Design II (5).** Pr., PG 625 and 620, 621, or 622.
Advanced topics in variance and multivariate analysis relating to research design.
631. **Social Psychology (5).** Pr., PG 431.
Major systems and theories relating to social psychology, including *Gestalt*, reinforcement, psychoanalytic, role and field theory.
635. **Theories of Personality (5).** Pr., PG 433 and 601.
Continuation of PG 433 emphasizing analysis of current issues.
637. **Behavior Pathology (5).** Pr., PG 435, 635, and consent of instructor.
Continuation of PG 435 emphasizing current theoretical conceptions and research in psychopathology.
640. **Physiological Psychology (5).** Lec. 2, Lab. 10. Pr., PG 621.
Relation to physiological and anatomical, particularly neuroanatomical, variables to the organism's capacity to respond to stimulation.
645. **Comparative Psychology (5).** Lec. 2, Lab. 10. Pr., PG 623, 625, and 640.
Analysis of intra- and inter-species behavior emphasizing physical and physiological uniquenesses, response comparability, and generalizability of behavioral principles.
650. **Theories of Learning (5).** Pr., PG 450 and 601.
Continuation of PG 450 emphasizing analysis of current issues.
670. **Individual Testing (5).** Lec. 2, Lab. 10. Pr., PG 415 and departmental approval.
Supervised practice in the administration and interpretation of individual intelligence tests.
671. **Personality Assessment I (5).** Lec. 3, Lab. 6. Pr., PG 670 and departmental approval.
Theory and application of methods of personality measurement with emphasis on interview and self-report data, and on the interpretation of tests of specific behavioral deficits.
672. **Personality Assessment II (5).** Lec. 3, Lab. 6. Pr., PG 671 and departmental approval.
Theory and application of methods of personality measurement with emphasis on projective techniques.
673. **Personality Assessment III.** (Credit to be arranged.) Maximum of 5 hours credit may be applied to minimum requirements for Master's degree.
Supervised practicum in personality assessment.
675. **Objective Techniques of Assessment (5).** Pr., PG 415 and 433.
Administration and interpretation of objective measures of aptitudes, performance, and personality.
680. **Current Research in Psychology (2).** Pr., consent of instructor. May be repeated for a maximum of 10 hours credit.
Review of current research on selected topics in psychology. Six hours credit in this course required of all doctoral students.
690. **Seminar.** (Credit to be arranged.) May be repeated.
Topics for advanced students, chosen according to need.
692. **Research in Special Topics.** (Credit to be arranged.) May be repeated for credit.
699. **Research and Thesis.** (Credit to be arranged.) May be repeated for credit.
799. **Research and Dissertation.** (Credit to be arranged.) May be repeated for credit.

Secondary Education (SED)

Professors Atkins, Head, Davis, Herndon, Scheid, and Weaver

Associate Professors Easterday and Justice

Assistant Professors Alley, Cheatham, Ensminger, Graves, Miles, Robertson,

Shell, and Yielding

Instructors Adams, Jhin, and Muniz

Undergraduate

102. Orientation (1).

Helps transfers from other curricula and students enrolled in other schools to understand teacher education and teaching as a profession. (Students sectioned by area of specialization.) (A) Art, (B) Business Education, (C) Theatre, (D) Foreign Language, (F) Home Economics, (G) English Language Arts, (H) Mathematics, (J) Music, (K) Science, (L) Social Science, (M) Speech, (N) Speech Correction, (S) Undeclared Majors.

103. Orientation (1).

Helps freshmen in planning their professional careers. (Students sectioned by area of specialization.) (A) Art, (B) Business Education, (C) Theatre, (D) Foreign Language, (F) Home Economics, (G) English Language Arts, (H) Mathematics, (J) Music, (K) Science, (L) Social Science, (M) Speech, (N) Speech Correction, (S) Undeclared Majors.

104. Introduction to Laboratory Experiences (1).

Required of all students completing the Teacher Education Program. Orientation to the Total Laboratory Experiences Program in the School of Education with specific attention to the orientation and initiation of the Pre-Teaching Field Experience Program. (Students sectioned by area of specialization.) (A) Art, (B) Business Education, (C) Theatre, (D) Foreign Language, (F) Home Economics, (G) English Language Arts, (H) Mathematics, (J) Music, (K) Science, (L) Social Science, (M) Speech, (N) Speech Correction, (S) Undeclared Majors.

201. Education (2).

Designed to help prospective teachers in the guidance of students. (A) Art Expression, (J) Music Experiences, (P) Communication Problems, (Q) Materials of Instruction, (R) Improvement in Reading.

201L. Education (1). Lab. 2.

Laboratory will be taken concurrently with the corresponding lecture course or independent of the lecture.

Curriculum and Teaching

Undergraduate students in secondary education with a teaching major and minor in secondary education only will take one course in Teaching and one course in Program in the major field and one course in either Teaching or Program in the minor field.

Students in secondary education may pursue a curriculum leading to certification for teaching in selected subject-matter fields in both the elementary and the secondary school. When this type program is pursued, certification requires that the student complete both the Teaching and the Program courses in the teaching field or fields in which certification is expected. Teaching fields for the twelve-grade program include health, physical education and recreation, industrial arts, and the subject-matter areas listed under Interdepartmental.

Teaching and Program courses may be scheduled and taught as separate courses, related courses, or as a unified program.

405. Teaching in Secondary School (3). Lec. 2, Lab. 2. Pr., FED 320, or equivalent.

(B) Business Education (Fall); (D) Foreign Language (Fall); (G) English Language Arts (Fall, Spring); (H) Mathematics (Fall); (K) Science (Fall); (L) Social Science (Fall, Winter, Spring).

407. Teaching Home Economics Education (5). Lec. 4, Lab. 2. Fall, Spring. Pr., FED 320, or equivalent.

410. Program in Secondary School (3). Lec. 2, Lab. 2. FED 320, or equivalent.

(B) Business Education (Spring); (D) Foreign Language (to be arranged); (G) English Language Arts (Winter, Spring); (H) Mathematics (Spring); (K) Science (Spring); (L) Social Science (Fall, Winter, Spring).

412. Program in Home Economics Education (4). Lec. 3, Lab. 2. Fall, Spring. Pr., FED 320, or equivalent.

425. Professional Internship in Secondary School (15). Pr., Sr. standing, Admission to Teacher Education three quarters prior to Internship, minimum of two appropriate Teaching and Program Courses.

(B) Business Education, (D) Foreign Language, (F) Home Economics, (G) English Language Arts, (H) Mathematics, (K) Science, (L) Social Science. (See description under Professional Internship in School of Education section.)

Advanced Undergraduate and Graduate

475. **Problems in Improvement of Reading at the Secondary School Level (5).** Pr., teaching experience or consent of instructor.
Problem areas of effective reading instruction in developmental reading. Grades seven through twelve. Emphasis on techniques and materials for the teaching of comprehension, study skills, vocabulary, and other related areas in the reading program and in the content areas of the secondary school.
494. **Organization of Instrumental Music (3).** Pr., IED 414.
Theory and practice in the organization and administration of instrumental music in public schools.
495. **Organization of Choral Music (3).** Pr., IED 414.
Theory and practice in the organization and administration of choral music in public schools.

Graduate

646. **Studies In Education (1-3).** Pr., one quarter of graduate study. Applies to one of the following areas of secondary school program:
(A) Art, (B) Business, (C) Theatre, (D) Foreign Language, (F) Home Economics, (G) English Language Arts, (H) Mathematics, (J) Music, (K) Science, (L) Social Science, (M) Speech, (N) Speech Correction, and (S) Educational Media (School Library Science).
649. **The Secondary School Program (5).**
For advanced graduate students. Major curriculum areas and teaching practices in the modern secondary school. Attention given to implications of research and theory for the total secondary school program.
650. **Seminar. Credit to be arranged (3-10). May be repeated.**
Each of these courses, 651, 652, 653, and 654, applies to the following areas of the secondary school program: (B) Business Education, (D) Foreign Language, (F) Home Economics Education, (G) English Language Arts, (H) Mathematics, (K) Science, and (L) Social Science.
651. **Research Studies in Education in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the school.
652. **Curriculum and Teaching in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Critical study of teaching practices and reappraisal of selecting experiences and content for curriculum improvement.
653. **Organization of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Advanced course. Program, organization and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
654. **Evaluation of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization with the total school program and with other educational programs of the community.
Study in other teaching areas including art; dramatic arts; gifted; mental retardation; music; speech; speech correction; health, physical education and recreation; and industrial arts is available also to students in secondary education.
- 659-660. **Practicum in Area of Specialization (5-5).** Pr., Master's Degree or equivalent in Education and permission of major professor.
The practicum provides advanced graduate students with supervised experience with emphasis on the application of concepts, principles, and skills acquired in previous course work.
699. **Thesis Research. (Credit to be arranged.) (May be taken more than one quarter.)**
798. **Research and Thesis (5).**
799. **Doctoral Research and Dissertation (TBA).**

Science

Undergraduate

453. **Science and Modern Living (5).** Lec. 4, Lab. 2. Pr., junior standing.
Interpretive course stressing the relationship of science to problems of personal and social living in modern technological society. The critical role of science in democracy.
473. **General Science for Teachers (5).** Lec. 4, Lab. 2. Pr., junior standing.
Gives the teacher essential knowledge of such fields as earth science, meteorology, astronomy, nuclear energy, which constitute significant aspects of the general science program.

Graduate

640-641. Advanced Study of High School General Science. Pr., SED 473.

Intensive study of selected topics from the area of the high school general science program.

For advanced courses in curriculum, school library science, higher education, and research and dissertation, see IED.

Sociology (SY)

Professor Hartwig, *Acting Head*

Associate Professor Shields

Assistant Professors French and Vanlandingham

Instructors Adams, Bradford, Campbell, Conway, Harris, and MacKenzie

201. **Introduction to Sociology (5).** Pr., sophomore standing and qualified third quarter freshman with departmental approval.
Principles and processes influencing the social life of man.
202. **Social Problems (5).** Pr., SY 201.
Current social problems with special reference to the socially inadequate.
203. **Cultural Anthropology (5).** Pr., sophomore standing.
Nature of culture, using materials taken from scientific studies of societies.
204. **Social Behavior (5).** Pr., SY 201 or PG 211.
Integrated social-anthropological, biological, and psychological factors which influence or determine human behavior; the emphasis is upon the normal average individual and/or group situations.
205. **Preparation for Marriage (3).** General elective. Open to freshmen with consent of instructor.
Basic factors in dating courtship, mate selection, and engagement in preparation for marriage and family living.
207. **Introductory Archaeology (5).** Pr., SY 201 or SY 203.
The history, principles, and methods for investigating and reconstructing past cultures.
220. **Statistics (5).** Pr., SY 201.
Basic statistical concepts, measures, and techniques used in sociological reports and research.
301. **Sociology of the Family (5).** Pr., SY 201 and junior standing.
The family in contemporary society.
302. **Criminology (5).** Pr., SY 201 and junior standing.
The causes of crime and its social treatment. Field trips required.
303. **History of Anthropology (5).** Pr., SY 203.
The development of anthropological thought from functionalism and evolutionism to culture and personality research and whole-culture analysis.
304. **Minority Groups (5).** Pr., junior standing.
Racial composition of the United States with special emphasis upon the adjustment of minority groups to the culture.
305. **Culture and Personality (3).** Pr., SY 201.
Socio-cultural factors in personality development and recent studies in national character.
306. **Penology (5).** Pr., junior standing and SY 302.
The history and development of corrections with particular emphasis upon modern rehabilitative processes.
308. **Juvenile Delinquency (5).** Pr., SY 201.
Historical and contemporary considerations relative to the juvenile offender. The emphasis is upon research data from the various sciences attempting to deal with this problem.
309. **Social Thought (5).** Pr., junior standing and SY 201 or consent of instructor.
Significant social thought leading to the emergence of modern sociological theory.
310. **Social Organization (5).** Alternate years. Pr., SY 201 or consent of instructor.
Structure and stratification of society. The contemporary scene is emphasized.
311. **Technology and Social Change (3).** General elective. Pr., junior standing.
Relationship between technological development and changes in modern society. Special emphasis placed upon the human relations aspects of modern science. Designed primarily to meet social science needs of students in the fields of engineering, agriculture, education, and the physical sciences.
312. **Marriage Adjustments (3).** General elective. Pr., junior standing.
Emotional, social and biological factors in the family setting with emphasis upon adjustments of marriage and parenthood.
370. **Methods of Social Research (5).** Pr., SY 201 or AS 361.
The principal methods of data collection and analysis in sociological research. Same course as AS 370. Credit in AS 370 excludes credit in SY 370.
401. **Population Problems (5).** Pr., junior standing.
Problems of quantity and quality of population including problems of composition, distribution, and migration. Attention is given to Alabama population.

402. **Social Theory (5).** Pr., SY 201 or consent of instructor; junior standing.
The range of contemporary social theory.
403. **Contemporary Anthropology (5).** Pr., SY 203, junior standing.
Contemporary, primitive, traditional and urban cultures, and recent research in culture change.
404. **Sociology of Power (5).** Pr., SY 201, junior standing.
A systematic concern with the dimensions and distribution of power in social life.
405. **Urban Sociology (5).** Pr., junior standing.
Growth and decline of cities with special emphasis on ecological and demographic characteristics, associations and institutions, class systems, and housing and city planning.
406. **Introduction to Social Welfare (5).** Pr., junior standing.
The social welfare field, including social case work. Primarily for students planning a career in the social welfare or related fields.
407. **Public Opinion and Propaganda (5).** Pr., junior standing, SY 201.
The area of social communication; the formation, place and importance of publics in modern society, of public opinion research, and of propaganda and public relations techniques.
408. **Industrial Sociology (5).** Pr., junior standing, SY 201.
The sociological approach to business organization and industrial relations. Emphasis given to organization principles operative in the economic life within a social system such as a factory or business establishment.
409. **Sociology of Religion (5).** Pr., SY 201, junior standing, or consent of instructor.
Analysis of religion as a social institution as found in the world's great religions. (To be offered in alternate years.)
410. **Sociology of Knowledge (5).** Pr., SY 201 or consent of instructor.
A review of sociological approaches to the understanding of human knowledge; a tracing of connections between knowledge and other facets of the sociocultural context.
414. **Field Instruction (5).** Pr., junior standing and consent of instructor.
Supplementary instruction concurrent with field experience in some field of work involving application of sociological perspectives to community life.
418. **Sociology of Occupations (5).** Pr., SY 201 and junior standing.
A comprehensive examination of specific occupational categories ranging from professional to service occupations. Special emphasis is placed on the relationship of occupational structures and institutions and the meaning of occupations for individuals and society.
450. **Directed Reading (5).** Pr., senior standing and consent of instructor.
An independent reading program, under supervision, to provide for the pursuit of specific interests in sociology not covered by other course offerings.

GRADUATE COURSES

602. **Seminar in the Family (5).** Pr., SY 301 or consent of instructor.
Advanced institutional nature of marriage and the family with particular emphasis upon the changing practices and notions in marital relationships as related to changes in the structure and functions of the family.
603. **Social Problems (5).** Pr., SY 202 and consent of instructor.
Special social problems such as old age, crime and delinquency, minorities, etc., within the framework of social problem theory.
604. **Seminar in Race and Culture (5).** Pr., SY 201 and SY 304 or consent of instructor.
Adjustment of races to culture with particular reference to the South; the historical and cultural background of the races in America; bi-racial system; problems of race relations.
608. **Organizational Analysis (5).**
A theoretical and empirical examination of the principal features of large-scale organizations in contemporary society. Directed research into particular organizational areas of present-day social life.
650. **Sociology Seminar (5).** May be repeated for a maximum of 10 credit hours. Pr., consent of instructor.
Designed for students engaged in intensive study and analysis of sociological subject areas.

NOTE: AS 461 and AS 462 are open to sociology majors; see Department of Agricultural Economics and Rural Sociology course offerings.

Speech (SP)

Professors Davis, Head, and W. Smith
Associate Professor C. Smith
Assistant Professors D. Bock, H. Bock, Gray, Moore, Ouzts,
Phillips, Sanders, and Taylor
Instructors Daniel, James, and Lopiccio
Audiologist Cutts, Director of Pre-School Deaf Program
Audiologist Knott

a. Fundamentals

101. **Listening Improvement (1).** Lec. 1, Lab. 1.
Developmental listening for students who wish to improve their skill in this area.

200. **Survey of the Bases of Speech (5).**
Acquaints the prospective speech major or minor with the fundamentals of speech, the historical, psychological, sociological and other bases.
201. **Introduction to Oral Communication (5).**
The nature, purposes, and process of oral communication. Theories of language, goals of various forms of oral communication are considered. Deviations from normal speech and special problems in communication are explored.
202. **Applied Oral Communication (3). Lec. 2, Lab. 3.**
To improve the efficiency and effectiveness of oral communication by covering the human organism as an oral communicator, the process of transmission and reception of information, the process of behavioral change and the ethical responsibilities involved.
300. **The Speech and Hearing Mechanism (5).**
Anatomy and physiology of the speech and hearing mechanism.
301. **Phonetics (3). Lec. 2, Lab. 2.**
Principles of phonetics and their application to speech.
401. **Psychology of Communication (5). Pr., junior standing, one course in psychology.**
Speech as a psychological phenomenon with consideration of language development, symbolism, verbal learning. Small groups and audience behavior and psychological studies in various areas of communication situations.
402. **Experimental Methods in Communication (5). Pr., junior standing.**
601. **Introduction to Graduate Study in Speech (5).**
Exploration of areas in which research is needed; resources available; methods of research in speech; structuring the research problem; presenting the results of research in speech.
602. **Seminar: Studies in Communication Theory (5).**
Contemporary theories and analysis of concepts, models and pertinent research in interpersonal communication. Consideration of selected topics.
603. **Measurement in Communication Research (3).**
Response measurement techniques and their application to behavioral research in communication. Particular attention is given to attitudinal and electrophysiological phenomena.
607. **Independent Study (1-5). May be repeated for a maximum of 10 hours credit.**
Conferences, readings, research, and reports in one of the listed areas: A. public address; B. interpretation; C. radio and television; D. group methods; E. speech pathology; F. audiology.
699. **Thesis. (Credit to be arranged.)**

b. Public Address

310. **Great American Speeches (3). All quarters. General elective.**
Critical study and comparison of representative outstanding American speeches; the issues with which they were identified; their relation to the social scene.
311. **Public Speaking (5). Pr., SP 202 or consent of instructor.**
Structure, style, and delivery of various types of speeches for different occasions, speeches to inform, to persuade, and to entertain. Theory and study of current examples combined with practice.
411. **Persuasive Speaking (5). Pr., junior standing and SP 202 or consent of instructor.**
Influencing individuals and audiences by means of spoken appeals. Salesmanship speaking. Analysis of forces which led to belief and action. Practice in organizing and presenting such appeals.
- 610-611. **History and Development of Rhetorical Theory I, II (5-5). Pr., consent of instructor.**
Advanced studies in the historical development of writings, men and movements. Materials selected from the periods: A. Ancient and Medieval; B. Renaissance and Modern.
613. **American Public Address I (5).**
Criticism of selected speakers, and speeches, 1750-1860, studies against a background of political, social, and intellectual issues.
614. **American Public Address II (5).**
Criticism of selected speeches and speakers, 1860 to present, studies against a background of political, social, and intellectual issues.
615. **Rhetorical Criticism (5). Pr., consent of instructor.**
The history and method of rhetorical criticism. Application of critical standards to selected men and their work.

c. Interpretation

220. **Fundamentals of Oral Interpretation of Literature (5). All quarters.**
Oral readings of prose, poetry and drama, enhancing the student's understanding and appreciation of the art of literature by engaging him actively in reading the literary text aloud.
421. **Oral Interpretation of Prose and Drama (5). Pr., junior standing and SP 220 or consent of instructor.**
Develops skill in the oral reading of prose and drama. Study of theories concerning the sound, sense and performance of these two types of literature.

422. **Oral Interpretation of Poetry (5).** Pr., junior standing and SP 220 or consent of instructor.
Theories concerning problems in reading verse, criticism and performance; modes of group performance are included.
620. **The History and Theory of Interpretation (5).**
The growth and change of theories regarding oral interpretation.

d. Television-Radio-Film

230. **Introduction to Broadcasting (5).**
The history, growth, and development of broadcast communications and the legal, social, and political aspects of broadcasting.
232. **Broadcast Instrumentation (3).**
Basic principles in the reproduction of sound and pictures, familiarization with the electronic characteristics of basic equipment in television, radio, and film.
234. **Broadcast Production Techniques—Radio (5).** Pr., SP 232 or consent of instructor.
Analysis of the creative efforts and responsibilities in the primary stages of broadcast production. Practice in writing, producing, directing, performing, and crewing radio productions and taped material.
235. **Modes of Film Communication (5).**
The film industry's contribution to television and other forms of mass communication; an analysis of the styles and forms of film production as entertainment, communication, education, and art.
236. **Broadcast Production Techniques—Television (5).** Pr., SP 232 or consent of instructor.
Practice in writing, producing, directing, performing, and crewing television productions and video-tape materials.
238. **Broadcast Speech (3).** Pr., SP 202 or consent of instructor.
Introduction to the responsibilities and skills required of the individual performer in the preparation, announcing, and narration of various types of non-dramatic material for television and radio.
334. **Advanced Radio Broadcasting (5).** Pr., junior standing and SP 234 or consent of instructor.
Continuation of SP 234. Advanced course in announcing techniques, program organization, audience analysis, recording sound effects, directing.
335. **Development of the Film (5).** Pr., SP 235 or consent of instructor.
The role of film, its history, contributions and effectiveness as an area of expression and communication; an analysis of the social, artistic, economic and cultural factors which have influenced the film.
336. **Television Production-Direction I (5).** Pr., SP 236 or consent of instructor.
Individual and group projects in the development and production of programs and formats; an intense study of directing theory and the director's role through presentation of educational and dramatic materials.
337. **Film Production I (5).** Pr., SP 235 or consent of instructor.
Studies in both theory and principles of film making. Special instruction given through practical application of silent film to the problems of production planning, writing, direction, cinematography, and editing.
338. **Broadcast News Writing (5).** Pr., junior standing and consent of instructor.
Writing and editing news and informational material for television and radio. Students solicit and prepare news from and for local sources.
436. **Television Production—Direction II (5).** Pr., junior standing and SP 336.
Individual and group projects in the creation of program material with special emphasis on the writer-producer and his role in the industry.
438. **Television—Radio—Film Writing (5).** Pr., junior standing and consent of instructor.
The technique of writing dramatic and non-dramatic material for television, radio, and films. Special emphasis is placed on performance. Students may elect to emphasize one area.
439. **Broadcasting in Education (5).** Pr., junior standing.
The uses, problems, potentialities and current developments in educational broadcasting with special emphasis on instructional and educational television.
630. **Studies in Radio, Television and Film (5).** Pr., consent of instructor.
Combined media and their relationship with speech and communication.
631. **History of American Broadcasting (5).** Pr., consent of instructor.
The origin of radio and television broadcasting and its development to the present day.
632. **Broadcast Programming and Criticism (5).** Pr., consent of instructor.
The theory and practice of programming, its problems and concepts, coupled with an analysis of the criticism leveled at the process and the product.
633. **Broadcast Regulations (5).**
The social and political control of broadcasting by agencies, groups, and organizations through legal, social, and economic means.

e. Speech Pathology and Audiology

(Speech Pathology)

050. **Speech Improvement (5 hr. Lab.—non-credit). May be repeated.**
Encourages the individual development and use of an acceptable pattern of speech with special attention to intelligibility, pronunciation, intensity, sound discrimination, voice quality, and the objective attitude.
355. **Clinical Procedures in Speech (1-3). May be repeated for credit.**
Orientation and an introduction to supervised clinical activity in the area of speech disorders. Clinical practice required.
450. **Principles of Speech Correction (5). Pr., junior standing.**
Not open to students emphasizing or majoring in speech correction and audiology. Basic principles underlying a speech correction program in a school setting. Description and discussion of speech disorders; surveys and identification techniques.
451. **Speech Correction I (5). Pr., junior standing and SP 355 or consent of instructor. For Speech Majors.**
The nature of the speech correction process with emphasis on disorders of articulation. Participation in clinic activities required.
452. **Speech Correction II (5). Pr., junior standing and SP 451 or consent of instructor.**
Continuation of SP 451 with emphasis on vocal disorders and disorders of rhythm. Participation in clinic activities required.
453. **Speech Correction III (5). Pr., junior standing and SP 452 or consent of instructor.**
Emphasis on disorders of symbolization and delayed language development. Participation in clinic activities required.
650. **Pathology (4). Pr., SP 453 or consent of instructor. May be repeated for credit.**
Advanced studies dealing with disorders of speech. Materials may be drawn from: A. cerebral disturbances (aphasia and cerebral palsy); B. palatolaryngeal disturbances (esophageal and cleft palate); C. voice disorders; D. stuttering; E. articulation (including dialect); F. delayed speech development.
655. **Clinical Problems in Speech (1-3). Pr., SP 453 or equivalent. May be repeated for credit.**
Methods, techniques, and clinical management of the disorders of speech. Clinical practice required.

(Audiology)

365. **Clinical Procedures in Hearing (1-3).**
Orientation and an introduction to supervised clinical activity in the area of hearing disorders. Clinical practice required.
460. **Introduction to Audiology (5). Pr., junior standing.**
Principles of auditory reception, the hearing mechanism and the problems involved in measuring, evaluating, and conserving hearing. Clinical observation.
461. **Hearing Pathology (5). Pr., SP 460 or equivalent.**
Evaluation and rehabilitation of aural handicapped children and adults; hearing aids and auditory training. Clinical practice.
462. **Hearing Evaluation, Rehabilitation and Conservation (5). Pr., junior standing, SP 461 or consent of instructor.**
Detailed concern for the rehabilitation problems of children and adults in the area of auditory training, speech reading and speech conservation. Clinical practice.
660. **Audiology (4). Pr., SP 460 or consent of instructor. May be repeated for credit.**
Advanced studies dealing with the disorders of hearing. Materials drawn from: A. speech reading; B. aural rehabilitation; C. clinical audiology; D. child and adult rehabilitation; E. hearing aid orientation; F. teaching speech and language to the deaf.
665. **Clinical Problems in Hearing (1-3). Pr., SP 460, 461, or equivalent. May be repeated for credit.**
Methods, techniques, and clinical management of the disorders of hearing. Clinical practice required.

f. Group Methods

270. **Group Leadership (3). All quarters. General elective.**
Nature and functions of group leadership; the role of democratic leadership in organizing and conducting a group meeting to reach group aims. Students gain leadership experience in class activities to help them learn and perfect democratic leadership techniques.
273. **Group Problem Solving Through Discussion (5). All quarters.**
Group problem solving through discussion. The values and limitations of discussion, the prerequisites of reaching agreement, and a systematic approach to solving problems in group discussion. Leadership in problem solving.
275. **Debate Workshop (1). May be repeated for a maximum of 3 credit hours.**
Introduction to the national debate question for beginning debaters interested in competition debate. Lecture and practical work.

278. **Argumentation and Debate (5).**
Debating techniques and procedures; their application to issues of current public interest; the gathering, organization, and presentation of facts, proofs, evidence.
371. **Parliamentary Procedure (3). All quarters. General elective.**
To aid the individual who may lead or participate in discussions or organizations where orderly procedure is needed. Theory and practice both employed.
375. **Debate Workshop (1). May be repeated for a maximum of 3 credit hours.**
Advanced study of the national debate question for experienced debaters. Analysis of logical, ethical and emotional proofs in competition debate. Lecture and practical work.
473. **Advanced Discussion (5). Pr., junior standing and SP 273 or consent of instructor.**
The theory and organization of problem-solving discussion and conference groups. Primarily for persons who work with groups.
478. **Advanced Argumentation and Debate (5). Pr., junior standing and SP 278 or consent of instructor.**
Function of argumentation and debate in a democracy and its application of principles of logic and evidence in past and present public speaking and debating.
673. **Seminar in Discussion (5). Pr., SP 273 or equivalent.**
Group problem solving through discussion. Includes the survey of published experimental work in discussion and considers the values and limitations of discussion as tools of the democratic leader. Special attention is paid the application of group problem-solving in education, business, industry, and agriculture.
678. **Seminar in Debate (1-5). May be repeated for a maximum of 5 credit hours.**
Psychological concepts of argument. Techniques and methods employed in argumentative discourse. Critical analysis of selected controversies and a survey of published experimental work in debate.

Textile Engineering (TE)

Professors Adams, *Head*, Knight, and Waters
Associate Professors Farrow and Hall
Assistant Professors Phillips and Walker
Instructor Perkins

101. **Introduction to Textiles (1).**
Orientation course for freshmen which briefly introduces all branches of the textile industry.
210. **Fiber Processing (5). Lec. 4, Lab. 3.**
Construction and operation of equipment for opening, cleaning, blending, picking, carding, combining, drawing; adaptation of these processes to synthetics and wool; calculations necessary for the planning and operation of this equipment.
211. **Yarn Manufacture I (5). Lec. 4, Lab. 3. Pr., TE 210.**
Construction and operation of roving and spinning equipment for cotton, wool, and synthetics; long draft systems and special drafting, systems for blends, etc.
220. **Weaving and Designing I (5). Lec. 4, Lab. 3.**
Automatic cam loom mechanism with designing of fabrics made on these looms.
305. **Fiber Technology (3). Lec. 2, Lab. 3. Pr., sophomore standing.**
Origin, characteristics, and properties of the various textile fibers, both natural and man-made; fiber microscopy.
307. **Bleaching and Dyeing (5). Lec. 4, Lab. 3.**
Bleaching, dyeing and finishing of natural and man-made fiber fabrics; all types of dyes for textiles, their application and fastness.
317. **Dyeing and Finishing (5). Lec. 4, Lab. 3. Pr., TE 307.**
Plant application methods and plant problems in dyeing, finishing and printing of natural and man-made fibers.
319. **Chemical Testing (2). Lec. 1, Lab. 3. Pr., junior standing.**
Theory and practice of testing of textile materials by chemical means; physical tests related to chemical properties, qualitative and quantitative analysis of textile materials.
320. **Weaving and Designing II (5). Lec. 4, Lab. 3. Pr., TE 220.**
Dobby and multibox operation, pattern planning, and designs applicable to dobby and box looms.
321. **Weaving and Designing III (5). Lec. 4, Lab. 3. Pr., TE 320.**
Special weaving attachments, and production of specialty fabrics. Weaving mill organization. Fabric identification.
322. **Yarn Manufacture II (5). Lec. 4, Lab. 3. Pr., TE 210 and TE 211.**
Methods of obtaining higher quality yarns; yarn production planning; practical manufacturing problems; yarn mill machinery layout and labor organization.
324. **Physical Testing (3). Lec. 2, Lab. 3. Pr., junior standing.**
Basic principles for measuring properties of natural and man-made fibers, yarns, and fabrics with use of laboratory testing equipment for familiarization with test methods.

325. **Textile Quality Control (2).** Pr., TE 210, TE 211, EC 245; Coreq., TE 324.
The practical use of statistics and quality control in the textile industry with emphasis on statistical control techniques.
405. **Warp Preparation (5).** Lec. 4, Lab. 3. Pr., junior standing.
Spooling, warping, and slashing of natural and synthetic yarns; chemistry of starches and synthetic polymers used as warp sizes; analysis of problems associated with preparation of warp yarn for weaving.
406. **Textile Costing (5).** Pr., junior standing.
Basic principles for figuring textile production costs; allocation of costs; fabric cost sheet; marketing costs.
412. **Textile Management (3).** Pr., senior standing.
A practical business management approach to the analysis and solution of problems in the textile industry. The major areas of concern to management are discussed, including policy determination, organization structure and analysis, employment function, manpower development, financing, purchasing, production, merchandising, industrial and public relations, etc.
417. **Advanced Dyeing (5).** Lec. 4, Lab. 3. Pr., TE 317.
Survey of major dye classes from a chemical standpoint; basic principles of color, color specification, color matching, and instrumentation; thermodynamic and kinetic study of the dyeing process.
418. **Jacquard Weaving and Design (2).** Lec. 1, Lab. 3. Pr., TE 220.
Jacquard mechanism and design of original patterns for jacquard loom.
424. **Man-Made Fibers I (5).** Pr., junior standing.
An introduction to the more important man-made fibers and polymer forming substances, and their considerations in the employment in fibers and blends.
425. **Man-Made Fibers II (5).** Pr., TE 424.
A continuation of TE 424. A further study of the relationships between fiber structure and geometry, and technological aspects on their properties and uses.
431. **Fabric Analysis (3).** Lec. 2, Lab. 3. Pr., TE 320.
Analysis of fabric structure and determination of specifications.

Theatre (TH)

Professor Campbell, *Head*
Assistant Professors, Comeau and Torri
Instructor Erickson

- 101-2-3. **Introduction to the Arts (1).**
A survey of the arts with emphasis on the interrelation between the various creative areas of Art, Music, Drama, Architecture, etc. from the position of the artist and the observer.
104. **Introduction to Theatre I (3).**
Theatre as an art form, a broad introduction involving general aesthetics, philosophy, and history.
105. **Introduction to Theatre II (3).**
A continuation of TH 104 with special emphasis on analysis of theatre as an art form requiring multiple talent resources.
106. **Introductory Theatre Projects (3).**
Each student engages in a theatre project which he conceives and effectuates under staff supervision.
107. **Stage Craft I (1).**
An introduction to technical theatre as the craft of scene construction.
108. **Stage Craft II (1).**
An introduction to technical theatre as the craft of electronics.
109. **Stage Craft Project (1).**
Each student engages in a stage craft project which he conceives and effectuates under staff supervision.
199. **Theatre Laboratory (2).**
General laboratory work (a minimum of 30 hours under staff supervision). A course open to any student interested in working on the theatre season of the Department in any production capacity. May be repeated for maximum credit of six quarter hours.
201. **The Theatre Artist in Society I (3).**
A historical examination of the role and place in society of the theatre artist with emphasis on recurring problems of orientation and acceptance.
202. **The Theatre Artist in Society II (3).**
An examination of the role and place in society of the theatre artist in America with emphasis on unionism, professionalism, and educational theatre.
203. **Theories of Acting (3).**
The theoretical aspects of acting to include writings from the time of Aristotle to the present day.

204. **Fundamentals of Acting I: Voice (5).**
Developing the voice as a performing instrument.
205. **Fundamentals of Acting II: Movement (5).**
Developing the body as a performing instrument.
206. **Acting I (5). Pr., TH 204, 205, or equivalent.**
A first course in acting involving the skills acquired in TH 204 and TH 205 in short acting sequences.
301. **History of Theatre in Western Civilization (3).**
The theatre as literature, institution, and architecture as it has existed from earliest times to the end of the medieval period.
302. **History of Theatre in Western Civilization (3). Pr., TH 301.**
The theatre as literature, institution, and architecture as it has existed in Western culture from the end of the medieval period until the mid-nineteenth century.
303. **History of Theatre in Western Civilization (3). Pr., TH 301, 302 or equivalent.**
The theatre as literature, institution, and architecture in Western civilization from the mid-nineteenth century to the present day with emphasis on theatre in America.
304. **Fundamentals of Stage Design (5).**
The basic considerations involved in all aspects of the performer's stage environment.
305. **Design in the Theatre I (5). Pr., TH 304 or equivalent.**
A continuation of fundamental design concepts with emphasis on stage lighting.
306. **Design in the Theatre II (5). Pr., TH 304, 305, or equivalent.**
Practice in stage design.
307. **Children's Theatre (3).**
Theatre for children involving an examination of play scripts, acting, and production techniques.
308. **Creative Dramatics (3).**
The dramatic instincts of pre-school and early elementary school children in the light of contemporary theory and practice in this area.
309. **Costume and Make-Up (3).**
The design and construction of elementary stage costumes and make-up.
- 310-11-12. **Dramatic Production (3-3-3). Lec. 2, Lab. 6. Only students approved by the department head may register for these courses.**
Advanced acting.
313. **Theatre Appreciation I (3). General Elective. Not open to Theatre Majors.**
A survey of the theatre and stagecraft from early times to the present day, emphasizing the social and artistic position of the stage in each civilization.
314. **Theatre Appreciation II (3). General Elective. Not open to Theatre Majors.**
A survey of contemporary plays and productions.
401. **Play Analysis (3).**
An examination of play scripts emphasizing interpretation from the viewpoint of directorial theory.
402. **World Theatre (3).**
Theatre literature and practice as they have developed and presently exist in cultures outside of the Western hemisphere.
403. **Seminar and Theatre Research (3).**
The past and present patterns of research in all areas of theatre and practice.
404. **Directing I (5).**
Introductory basis theory and technique of directing theatre productions.
405. **Directing II (5).**
A continuation of 404 involving exercises in directing.
406. **Directing III (5).**
Provides the student with several directing problems which must be solved through the completion of a directing project. Prerequisites 405, 406 or equivalents.
407. **Acting II (5). Pr., TH 204, 205, 206, or equivalent.**
Specialized areas of acting theory and technique with emphasis on acting theoreticians of the twentieth century.
408. **Problems in Aesthetic Design (5). Pr., TH 304, 305, 306, or equivalent.**
An intensive study of stage design problem solving based on the works of design theoreticians of the twentieth century.
409. **Directing IV (5). Pr., TH 404, 405, or equivalent.**
Directing theory based on the detailed analysis of the work and writings of selected twentieth century directors.
- 410-11-12. **Dramatic Production (3-3-3). Lec. 2, Lab. 6. Pr., approval of department head.**
Seminar and workshop in Advanced Acting.

- 425-26. **Theatre Practice in the School (5-5).** Pr., senior or graduate standing. (Either part can be taken separately.) To be offered in the Summer quarter only.
For the teacher who is called upon to select, plan, coach, and produce plays, classroom and assembly programs.
427. **Introduction to Theatre Management (5).**
An introduction to the field of theatre management with emphasis on elementary procedures involving sales and advertising management.
428. **Personnel Management in Theatre (5).**
Personnel management in theatre involving study of the union regulations of Actor's Equity of America, the Screen Actor's Guild and international unionized performing.
429. **Theatre Plant Management (5).**
Theatre plant management involving a study of design in relation to security, insurance and urban development.

Veterinary Medicine (VM)

Anatomy and Histology

Professor Holloway, *Head*
Associate Professor McKibben
Assistant Professors James and Krista
Instructors Reynolds, Guenther, Lampru, and Engel
Technician Dennis

Microbiology

Professors Groth, *Head*, Neal and Jennings
Associate Professors Attleberger, Cody, and Miller
Assistant Professors Wilt and McCain
Instructors Smith and Kelley
Lecturers Alley and Christenberry
Technicians Summers and Renfroe
Grad. Res. Asst. Joshi

Pathology and Parasitology

Professors Groth, *Head*, Roberts
Associate Professors Hoff, Britt, Powers, and Shields
Assistant Professors Diamond, Teer, and Benz
Research Lecturers Davis, Frandsen, and Ernst
Technicians McConnell and Hayes

Physiology and Pharmacology

Professors Clark, *Head*, Burns, and Redding
Associate Professors Alexander and Beckett
Assistant Professors Robertson, Botta, and Pedersoli
Instructor Wright
Technician Gilder
Graduate Assistant Britton

Radiology Section

Assistant Professor Bartels

Large Animal Surgery and Medicine

Professors Schell, *Head*, Gibbons, Wiggins, Walker**, and Kiesel
Associate Professors Winkler and Kjar
Instructors Scott, Hudson, Gates, and Britt
Intern Dougherty

**On leave

Small Animal Surgery and Medicine

Professors Hoerlein, *Head*, Redding

Associate Professor Horne

Assistant Professors Albert, Doering, and Hanks

Instructors Everett and Leonard

Research Assistant Swaim

Technicians Lewis and Sellers

200. **General Microbiology (5).** Lec. 3, Lab. 4. Fall, Winter, Spring. Pr., General and Organic Chemistry.
Fundamentals of microbiology including history of microbiology, morphology, metabolism, classification, identification, cultivation, and distribution of bacteria, viruses, yeasts, and molds; also an introduction to applied microbiology.
204. **Pathogenic Microbiology (5).** Lec. 3, Lab. 4. Summer, Fall, Spring. Pr., General Microbiology.
Microorganisms pathogenic to man and animals. Immunity to, and laboratory diagnosis of, diseases caused by microorganisms.
210. **Human Physiology (5).** Lec. 3, Lab. 4. All quarters.
Functions and manner of operation of the body and its parts, with special emphasis on digestion, circulation and reproduction. Laboratory exercises illustrate the functions of the various organ systems of the body.
220. **Human Anatomy and Physiology (5).** Lec. 3, Lab. 4. Summer, Fall and Winter.
For students in Laboratory Technology and others who are qualified. Human skeletal, muscular and nervous systems. Human models, cats and frogs are used in laboratory to supplement lecture material.
221. **Human Anatomy and Physiology (5).** Lec. 3, Lab. 4. Winter and Spring.
Anatomy and physiology related to the heart, circulation, blood, digestion, metabolism, kidney, respiration, endocrines and reproduction.
311. **General Bacteriology (5).** Lec. 3, Lab. 4. Winter and Summer.
For students in Home Economics. Elementary bacteriology as applied to foods, industry and home sanitation.
318. **Physiology I (3).** Lec. 2, Lab. 2. Fall.
Theoretical and practical application of radioactive nuclides in biologic systems and principles of electronic instruments used in veterinary medicine.
- 320-21-22. **Anatomy I, II, III (5-5-5).** Lec. 2, Lab. 10. Fall, Winter and Spring.
Gross anatomy of domestic animals. A progressive anatomical study of the gross structures of the dog, ox, horse, hog and fowl.
326. **Histology (5).** Lec. 2, Lab. 6. Fall.
Microscopic anatomy of the form, structure, and characteristics of basic animal tissues.
327. **Organology (5).** Lec. 2, Lab. 6. Winter. Pr., VM 326.
Continuation of VM 326. Microscopic anatomy of the tissue composition of organs and organ systems.
328. **Embryology (5).** Lec. 2, Lab. 6. Spring. Pr., VM 327.
Formation and early development of the embryos of domestic animals. Fetal membranes and placentation are emphasized.
329. **Physiology II (3).** Lec. 2, Lab. 2. Winter.
Metabolism, liver function, molecular physiology, and chemical digestion.
330. **Veterinary Microbiology I (5).** Lec. 3, Lab. 4. Fall.
Fundamentals of microbiology for students in veterinary medicine.
331. **Veterinary Microbiology II (5).** Lec. 3, Lab. 4. Winter. Pr., VM 330 or equivalent.
Sources and mechanisms of infections, principles of immunology, and biological prophylaxis and therapy. Also includes serological techniques used in diagnosis of infectious diseases.
332. **Physiology III (3).** Lec. 2, Lab. 2. Spring.
Metabolism, liver function, molecular physiology, and chemical digestion.
336. **Physiology IV (5).** Lec. 4, Lab. 3. Spring.
Endocrinology, reproduction, mechanical digestion, and respiration.
421. **Animal Physiology (5).** Winter.
Physiology of the farm animals with special emphasis on digestion, endocrinology and reproduction.
422. **Animal Disease Control (5).** Spring. Pr., VM 421 and General Microbiology.
Herd management and practices proven to be of value in the prevention and control of the important diseases of farm animals.
- 436-37-38. **Pharmacology I, II, III (5-3-5).** Lec. 3, Lab. 4. Fall, Winter and Spring.
Pharmacodynamics, posology and therapeutics of drugs with veterinary application. Drugs are designated by U.S.P., generic, and proprietary names.
443. **Physiology V (5).** Lec. 4, Lab. 3. Fall.
Neurology and electrocardiology.

444. **Physiology VI (5).** Lec. 4, Lab. 3. Winter.
Blood, circulation, fluids and the kidney.
450. **Pathology I (5).** Lec. 3, Lab. 4. Fall. Pr., VM 326-327-328.
General pathology. Fundamental anatomic and functional alterations of cells and tissues in disease.
451. **Pathology II (5).** Lec. 3, Lab. 4. Winter. Pr., VM 450.
Study of disease processes affecting animals. Emphasis is placed on gross and microscopic changes in organs and systems.
452. **Clinical Pathology (3).** Lec. 1, Lab. 4. Spring. Pr., VM 451.
Methods for the collection, preservation, and examination of various body fluids including blood and urine. Interpretation of results is directed toward clinical diagnosis and prognosis.
453. **Pathology III (3).** Lec. 2, Lab. 2. Spring. Pr., VM 451.
Continuation of VM 451.
456. **Veterinary Parasitology I (3).** Lec. 2, Lab. 2. Fall.
Introduction to parasitology including internal parasites or ruminants.
457. **Veterinary Parasitology II (5).** Lec. 3, Lab. 4. Winter. Pr., VM 456.
Internal parasites of domestic animals.
458. **Veterinary Parasitology III (3).** Lec. 2, Lab. 2. Spring. Pr., VM 457.
Important ectoparasites of domestic animals.
461. **Veterinary Microbiology III (5).** Lec. 3, Lab. 4. Spring. Pr., VM 331 or equivalent.
Detailed study of bacteria, viruses, yeasts and molds causing diseases of domestic animals.
- 500-01-02. **Veterinary Medicine I, II, III (5-5-3).** Fall, Winter and Spring.
Detailed study of the etiology, symptoms, pathogenesis, diagnosis, treatment and prevention of the medical diseases affecting the various systems and organs of the equine, bovine, ovine, and porcine species.
503. **Veterinary Surgery I (3).** Lec. 3. Winter.
Background of surgery; major surgical injuries-wounds, fluid loss and infection; preoperative and postoperative care; surgical technique; anesthesia; and extirpative, reconstructive and physiologic surgery.
504. **Veterinary Surgery II (5).** Lec. 5. Spring.
Special surgical diseases of the domestic farm animals including surgery of the alimentary canal, the chest and abdomen, the respiratory and cardiovascular systems, the eye and ear, the genito-urinary tract, and the feet and limbs.
508. **Clinics III (1).** Lab. 10. Spring.
Conferences, laboratory exercises and clinical practice in diagnosis, control and therapy of diseases of large domestic animals.
509. **Clinics IV (1).** Lab. 10. Spring.
Conferences, laboratory exercises and clinical practice in diagnosis, control and therapy of diseases of small domestic animals.
510. **Veterinary Medicine IV (5).** Fall.
Consideration of the noninfectious and parasitic diseases of the respiratory, cardiovascular, gastro-intestinal, urogenital and integumentary systems in the small domestic animals.
512. **Veterinary Surgery III (5).** Lec. 3, Lab. 4. Spring.
Lecture-specific basic surgical techniques. Laboratory-performance of basic surgical operations on anesthetized animals owned by the University.
519. **Veterinary Medicine V (3).** Spring. Pr., VM 510.
Continuation of VM 510. Detailed consideration of differential diagnosis of diseases of small domestic animals.
523. **Veterinary Public Health I (5).** Lec. 4, Lab. 2. Winter. Pr., VM 461.
Principles of epidemiology, selected diseases of animals transmissible to man and the relationship of the veterinarian to public health and animal disease control agencies.
- 525-31. **Jurisprudence and Ethics (1-1).** Fall and Winter.
Laws relating to duties of the veterinarian to the public and to his clients, his liabilities, rights, collection of fees, etc. Ethics as applied to the veterinary profession.
526. **Clinics I (2).** Lec. 1, Lab. 4. Fall.
Demonstration and practice of methods employed in physical diagnosis, handling, restraint and administration of therapeutic agents to large animals.
527. **Clinics II (2).** Lec. 1, Lab. 4. Winter.
The demonstration and practice of methods employed in physical diagnosis, handling, restraint, and administration of therapeutic agents to small animals.
530. **Veterinary Radiology (3).** Lec. 3. Winter.
Basic diagnostic radiology including interpretations, techniques, therapy, and equipment.
534. **Laboratory Animal Medicine (3).** Lec. 2, Lab. 2. Fall. Pr., VM 461.
Management, utilization, and diseases of the common laboratory mammals including rats, mice, guinea pigs, hamsters, rabbits, and nonhuman primates.
540. **Veterinary Obstetrics I (2).** Winter.
Infertility of the male and female. Artificial insemination.
542. **Applied Anatomy (3).** Lab. 6. Summer. Pr., VM 322.
Anatomy related to diagnostic, obstetrical, and surgical procedures.

550. **Veterinary Obstetrics II (2).** Spring.
Pregnancy diagnosis and the causes and corrections of dystocia in large animals.
552. **Jurisprudence and Ethics (1).** Fall.
Laws relating to duties of the veterinarian to the public and to his clients, his liabilities, rights, collection of fees, etc. Ethics as applied to the veterinary profession.
553. **Special Anatomy (1 to 5).** Hours and credit to be arranged. Pr., VM 320.
Elective course in which any phase of anatomy of domestic animals to the anticipated field of specialization may be studied.
554. **Veterinary Medicine VI (5).** Summer.
Study and identification of the poisonous plants of the Southeastern states as well as their characteristic symptoms, lesions, and treatment. Selected specific diseases of farm animals are also discussed.
- 555-56. **Veterinary Medicine VII, VIII (5-5).** Fall and Winter.
Principal infectious diseases of the large domestic animals. Epizootiology, etiology, symptoms, diagnosis and prevention of diseases, including immunization and sanitation.
559. **Veterinary Medicine IX (3).** Lec. 3. Fall.
Consideration of the noninfectious diseases of the eye and central nervous system in the small domestic animals.
560. **Veterinary Obstetrics III (3).** Lec. 3. Summer.
Clinical application of the physiology of reproduction. Teratology.
561. **Veterinary Medicine X (3).** Lec. 3. Fall.
Methods of diagnosis, necropsy findings, and treatment of common chemical and venom poisoning of farm animals and pets.
- 563-64-65. **Clinics VI, VIII, X (2-2-2).** Lab. 11. Summer, Fall and Winter.
Conferences, laboratory exercises, and practice in diagnosis, control, and therapy of diseases of small domestic animals.
- 566-67-68. **Clinics V, VII, IX (3-3-3).** Lab. 11. Summer, Fall and Winter.
Conferences, laboratory exercises, and clinical practice in diagnosis, control, and therapy of diseases of large domestic animals.
569. **Veterinary Public Health II (5).** Summer. Pr., VM 542, 458, and 461.
Principles and methodology of food hygiene including meat, milk, poultry, and other foods related to animal and human health.
- 572-73-74. **Veterinary Surgery IV, V, VI (1-1-1).** Lab. 2. Summer, Fall and Winter.
Detailed consideration and performance of advanced small animal surgery.
582. **Seminar (3).** Winter.
Literature reviews or research problems selected by the student. Papers written and oral presentation given before his class and faculty.
588. **Veterinary Medicine XI (5).** Lec. 5. Winter.
Special emphasis on the newer aspects of diseases of metabolism and the nutritional diseases of farm animals. Includes diseases of swine and sheep.
592. **Preceptorship (0).** Spring. Non-Credit required course.
Completion of satisfactory preceptorship during the spring quarter is required for graduation.

GRADUATE COURSES

414. **Techniques in Bacteriology (5).** Pr., VM 461 or equivalent and junior standing. Any quarter by arrangement.
Advanced techniques used in bacteriology, pertaining to isolation, cultivation and identification of microorganisms. (Course limited to five students.)
418. **General Pathology (5).** Lec. 3, Lab. 4. Fall. Pr., satisfactory courses in histology and physiology.
Fundamental alterations of disease, adapted for especially qualified graduate students. (Not available for candidates for M.S. in Veterinary Medicine.)
425. **Intermediate Human Physiology (5).** Lec. 4, Lab. 2. Fall by arrangement. Pr., VM 210 or its equivalent and junior standing.
For advanced students in home economics, education and others who are qualified. A detailed study of the physiology of the various organs of the body. (Not available for candidates for M.S. in Veterinary Medicine.)
441. **Physiological Function Tests and Laboratory Diagnosis (5).** Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor, acceptable courses in physiology, and junior standing.
Chemical, photometric, and enzymatic procedures used in diagnosis of abnormal body functions. Included are function tests for the thyroid, liver, kidney, heart, pancreas, etc.
460. **Histological Techniques (2 to 5).** Hours and credit to be arranged. Pr., VM 326 or equivalent and junior standing.
Techniques employed in the preparation of cytological and histological materials.
465. **Special Techniques in Histopathology (3).** Lab. 9. Pr., VM 453, VM 460. Any quarter by arrangement.
Special stains and techniques of histochemistry employed in the preparation of materials for histopathologic study.

467. Gross Pathology (2). Lab. 6. Pr., VM 453, junior standing and permission of instructor. Any quarter by arrangement.
Regular participation in autopsy examinations under supervision of senior staff members. Designed to give the graduate student experience in autopsy procedures and in diagnostic interpretation of gross lesions. (Required of all majors and minors in Pathology.)
480. Radiological Techniques (5). Lec. 3, Lab. 4. Any quarter by arrangement.
Radiographic techniques including assignments on basic radiation physics.
495. Virology (5). Lec. 2, Lab. 6. Pr., VM 200 and VM 204 or VM 461; junior standing. Spring.
Basic concepts, methods of isolation, cultivation and purification of viruses and rickettsiae. (For students in biological sciences, biochemistry, pharmacy and veterinary medicine.)
- 601-02. Advanced Pathogenic Microbiology (5-5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., acceptable courses in microbiology and immunology.
Identification of pathogenic microorganisms and their relationship to animal diseases.
- 604-05. Immunology (5-5). Lec. 2, Lab. 6. Pr., VM 461 or equivalent. Spring quarter by arrangement.
Immunizing agents, methods of establishing immunity, and techniques for demonstrating various types of immunity and antigen-antibody reactions. The work may be arranged to meet the particular interest of the student.
608. Determinative Microbiology (5). Lec. 2, Lab. 6. Fall Quarter by arrangement. Pr., VM 200 and VM 414.
Microbial classification, identification, and concepts pertaining to international rules of nomenclature.
609. Clinical Mycology (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in bacteriology.
Methods and techniques used in isolating and propagating yeasts, molds and actinomycetes pathogenic for animals. Laboratory diagnosis of fungus infections in animals.
610. Microbial Physiology (5). Lec. 2, Lab. 6. Pr., CH 418 and VM 414 or equivalent. Spring.
Biochemistry and genetics of structure and metabolism of microorganisms.
- 611-12. Advanced Pathology (5-5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., VM 453 or equivalent.
A comprehensive study of gross and microscopic lesions of animal diseases.
615. Oncology (5). Lec. 1, Lab. 8. Pr., VM 465. Any quarter by arrangement.
The gross and microscopic pathology of the neoplasms of the domestic animals.
616. Histochemistry (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., CH 419, VM 418, VM 460 or ZY 308 or equivalent.
Evaluation and application of histochemical methods in the localization of cellular constituents.
617. Veterinary Protozoology (5). Lec. 3, Lab. 4. Any quarter by arrangement. Pr., VM 458 or ZY 411 or equivalent.
Detailed study of selected diseases of veterinary importance caused by protozoan parasites.
- 618-19. Veterinary Helminthology (5-5). Lec. 3, Lab. 4. Any quarter by arrangement. Pr., VM 458 or ZY 411 or equivalent.
Detailed study of selected diseases of veterinary importance caused by metazoan parasites.
620. Pathology of Parasitic Diseases (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., VM 453 and 458 or equivalent.
A detailed study of the pathology of parasitic diseases of veterinary importance.
- 621-22. Advanced Anatomy (5-5). Lec. 2, Lab. 9. Pr., permission of instructor. Any quarter by arrangement.
A. Cardiovascular Anatomy. B. Anatomy of the Urogenital System. C. Neuroanatomy. D. The Anatomy of the Locomotor System, and E. The Anatomy of the Special Senses.
624. Experimental Neuroanatomy (5). Lec. 2, Lab. 9. Pr., VM 621-622 (C) Neuroanatomy. Any quarter by arrangement.
Results of especially oriented experimental lesions of the central nervous system employing the Horsley-Clark stereotaxic instrument.
- 625-26. Advanced Histology of Domestic Animals (5-5). Lec. 2, Lab. 9. Any quarter by arrangement.
Special phases of the microscopic structure of animal tissues and organs.
631. Advanced Pathological Physiology (5). Any quarter by arrangement. Pr., CH 301 and VM 421 or their equivalent.
The physiological response of the body to disease. Diseases discussed will be those of the liver and kidney.
632. Advanced Pathological Physiology (5). Lec. 4, Lab. 3. Any quarter by arrangement. Pr., CH 301 and VM 421 or their equivalent.
Physiological explanation of abnormalities of the reproductive and endocrine systems.

633. **Advanced Pathological Physiology (5).** Lec. 4, Lab. 3. Any quarter by arrangement. Pr., VM 421 or its equivalent.
Abnormalities of the nervous system which lend themselves to a physiological explanation.
- 635-36. **Advanced Veterinary Pharmacology (5-5).** Lec. 3, Lab. 4. Any quarter by arrangement. Pr., VM 436, VM 437, VM 438.
Pharmacology of some of the more important drugs used in veterinary medicine. In the laboratory, students will have an opportunity to determine the pharmacology of the drugs on the horse, cow, pig and dog.
638. **Physiology of Digestion (5).** Any quarter by arrangement. Pr., CH 301 and VM 421 or their equivalent.
Enzymatic and bacterial digestion as well as the motility of the gastro-intestinal tract in farm animals.
639. **Small Animal Nutrition (5).** Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in physiology.
Requirement of amino acids, fats, carbohydrates, minerals and vitamins for dogs, cats and other small animals. Nutritional antagonists and symptoms of nutritional deficiencies in the animals.
643. **Veterinary Radiation Biology (5).** Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in chemistry and animal physiology.
Instruments used for radiation detection, isotope techniques, and diagnostic tests used in animals, and the effects of radiation on animal tissues. Isotopes will be primarily gamma emitters.
645. **Electrocardiology and Blood Vascular Physiology (5).** Any quarter by arrangement. Pr., VM 421 or its equivalent.
Physiology of the blood vascular system and the advanced techniques used in electrocardiology.
647. **Canine Neurosurgery (5).** Lec. 2, Lab. 6. Any quarter by arrangement. Pr., permission of the instructor.
Applied anatomy, physiology, physical and radiographic diagnosis, and surgical correction of lesions (especially those of traumatic origin) affecting the nervous system of the dog.
- 651-52. **Advanced Large Animal Surgery (5-5).** Lec. 1, Lab. 8. Any quarter by arrangement.
Research in surgery. Advanced techniques for surgical procedures in domestic animals.
- 654-55. **Advanced Large Animal Medicine (5-5).** Lec. 1, Lab. 8. Any quarter by arrangement.
Special study of the causes, methods of diagnosis, treatment and methods of control and eradication of selected non-surgical diseases of domestic animals.
- 657-58. **Breeding Diseases of Animals (5-5).** Any quarter by arrangement.
Graduate study of fertility in domesticated animals, but particularly, investigation into the etiology, pathogenesis, and treatment of sterility and impaired fertility. Diseases of pregnancy and parturition are also included.
660. **Advanced Small Animal Surgery (5).** Lec. 1, Lab. 10. Any quarter by arrangement.
Techniques in general small animal surgery.
662. **Advanced Small Animal Orthopedic Surgery (5).** Lec. 1, Lab. 10. Any quarter by arrangement.
New techniques in general orthopedic surgery.
663. **Advanced Small Animal Eye Surgery (5).** Lec. 1, Lab. 10. Any quarter by arrangement.
New techniques in eye surgery.
- 664-65. **Advanced Small Animal Medicine (5-5).** Lec. 1, Lab. 10. Any quarter by arrangement.
Causes, methods of diagnosis, treatment and control of non-surgical diseases of small animals.
666. **Advanced Canine Neurology (5).** Lec. 3, Lab. 6. Any quarter by arrangement.
Etiology of diagnosis, treatment and control of neurological diseases of the dog.
667. **Normal Radiological Anatomy (5).** Lec. 4, Lab. 2. Any quarter by arrangement.
Normal structure, size and position of the various organs as they appear on flat and contrast radiographs.
668. **Advanced Radiology (5).** Lec. 1, Lab. 8. Any quarter by arrangement.
Advanced radiographic techniques including fluoroscopy, uses of contrast mediums, and the principles of image intensification and cineradiography.
669. **Radiological Interpretations (5).** Lec. 1, Lab. 8. Any quarter by arrangement.
Advanced study of radiological interpretation of pathological lesions of domestic animals.
671. **Small Animal Cardiovascular Surgery (5).** Lec. 1, Lab. 10. Any quarter by arrangement.
Application of accepted, as well as the recently developed techniques of cardiovascular surgery.

696. Seminar (0-1). Non-credit course required of all graduate students in Veterinary Medicine.
Meets regularly at scheduled intervals each year during Summer Quarter.
698. Research Problems (2 to 5). (Credit to be arranged.)
699. Research and Thesis. (Credit to be arranged.)

Vocational and Adult Education (VED)

Professor Montgomery, *Head*

Associate Professors R. A. Baker, Bottoms,

Leffard, Pruett and Selman

Assistant Professors Anderson, R. J. Baker, Brabham, Clayton,

Couch, Eaddy, Frank, Knight, and Sink

Instructors Barnes, Burton, Capps, Cook, Drake, Farrar, Hill, Johnson,

Mann, Moates, Nadolsky, Parker, Sawyer, and Scott

102. Orientation (1).
Helps transfers from other curricula and students pursuing the dual objectives program to understand teacher education and teaching as a profession.
103. Orientation (1).
Helps freshmen in planning their professional careers.
104. Introduction to Laboratory Experiences (1).
Required of all students completing the Teacher Education Program. Orientation to the total Laboratory Experiences Program in the School of Education with specific attention to the Orientation and Initiation of the Pre-Teaching Field Experience Program.
246. Instructional Drawing (3). Lab. 6.
Preparing for the shop laboratory, including making freehand and pictorial sketches and drawings, reading working drawings, blue prints, manufacturers guides, and lettering, use of instruments, dimensioning, making models, floor plans, bills for materials, writing specifications, and developing working plans.
330. Careers in Rehabilitation Services (5).
History, legal basis, and fields of rehabilitation services. Exploration of specialty fields of mental retardation, mental illness, public offender, physically handicapped, speech therapy and hearing, visually handicapped, respiratory disease, alcoholic and aging.
346. Vocational and Adult Education (3).
Ways of studying occupational needs and developing and operating local program of vocational and adult education.
400. Introduction to Power Mechanics (5). Lec. 2, Lab. 6.
Design and operational theories related to power machines. Internal combustion engines; power trains; hydraulic and cooling systems.
401. Practicum in Small Gasoline Engines (5). Lec. 2, Lab. 6.
Application of skills and abilities needed in teaching the maintenance and repair of small air cooled engines. Theories of compression, carburetion and ignition; laboratory exercises in repair and maintenance.
402. Automotive Construction and Repair (5). Lec. 2, Lab. 6.
Theories of design, principles of operation, and maintenance and repair of ignition system, fuel systems, power systems and chassis components.
404. Practicum in General Metals (5). Lec. 2, Lab. 6.
Application of skills and abilities needed in the teaching of metal processes applicable to vocational education program in the secondary school. Metal properties; power tools; heat treating; ornamental iron work, cold metal; sheet metal; machining metals; and arc and gas welding.
405. The School Shop (3).
Organization and management of the school shop; methods and materials integrated with the study of jobs and problems basic to the teaching of skills in vocational education.
406. Practicum in Building Construction and Maintenance (5). Lec. 2, Lab. 6.
Application of skills and abilities needed in teaching the erections of buildings and other related structures. Bills of materials; hand and machine woodworking; structural carpentry; plumbing; design and installation of residence wiring; heating and cooling concrete and masonry construction; painting and other related information. (A) Agricultural education majors and (B) Basic vocational education majors.
407. Practicum in Electricity (5). Lec. 2, Lab. 6.
Application of skills and abilities needed in the teaching of fundamental principles of electricity. Planning and developing projects involving an understanding of electrical principles as applied to materials selection, circuits, motors and devices; and maintenance and servicing of electrical equipment and appliances.
409. Teaching Electronics in Industrial Arts (5). Lec. 2, Lab. 6, Pr., departmental approval.
Theories and practices used in school electronic laboratories; projects designed and constructed.

- 414. Program in Area of Specialization (3). Lec. 2, Lab. 2. Pr., VED 410.**
Program planning principles involved in designing program activities for specific areas of specialization. (A) Agricultural Education, (B) Industrial Arts Education, (C) Trade and Industrial Education, (D) Distributive Education, (E) Rehabilitation, (F) Adult Education, and (G) Technical Education.
- 415. Teaching in Area of Specialization (3-5). Lec. 2, Lab. 2. Pr., VED 414.**
Understanding of curriculum content; methods and techniques of instruction using appropriate instructional materials; planning and evaluation of instruction for specific area of specialization. (A) Agricultural Education, (B) Industrial Arts Education, (C) Trade and Industrial Education, (D) Distributive Education, (E) Rehabilitation, (F) Adult Education, (G) Technical Education.
- 423. Program in Basic Vocational Education (3). Lec. 2, Lab. 2. Pr., FED 320 or equivalent.**
(A) Agriculture, (B) Building Construction, (C) Distributive Business, (D) Metals Technology, and (E) Power Mechanics.
- Undergraduate students with a major in industrial arts will pursue a minor selected from some other teaching area in the secondary school program or in one of the areas included in the twelve-grade program. (For appropriate course or courses in Teaching or Program, see SED, IED, and HPR.)
- 425. Professional Internship in Vocational and Adult Education (15). Pr., Sr. standing, Admission to Teacher Education three quarters prior to Internship, minimum of two appropriate Teaching and Program Courses.**
(For description, see Professional Internship in School of Education section.)
A directed practicum to provide opportunities for students to develop needed competencies in areas of specialization through observation and practice with on-going programs in selected centers. (A) Agricultural Education, (B) Industrial Arts Education, (C) Trade and Industrial Education, (D) Distributive Education, (E) Rehabilitation, (F) Adult Education, and (G) Technical Education.
- 441. Development of Vocational Education (4).**
Historical perspective of the development of vocational education with an overview of its nature and purpose relative to the technological society.
- 456. Learning Resources in Area of Specialization (3). Pr., FED 320 or equivalent.**
(A) Agricultural Education, (B) Industrial Arts Education, (C) Trade and Industrial Education, (D) Distributive Education, (E) Rehabilitation, (F) Adult Education, and (G) Technical Education.
- 458. Coordination and Supervision of Vocational Education Programs (3). Lec. 2, Lab. 2. Pr., VED 414.**
Develops and maintains appropriate relationship between the school and on-the-job program; records of coordination; student placement; improving employable skills and habits; recruitment and selection of work experience applicants; work experience rotation; public information and other similar activities.
- 462. Directed Work Experience in Distributive Education (5). Lab. 10. Pr., VED 414.**
In-service, supervised work experience. Individually designed for part-time and/or summer experience.
- 466. Teaching Out-of-School Groups (3). Pr., VED 414.**
Conducting surveys, occupational analysis, using advisory committees, organizing, conducting and supervising various types of adult education.
- 475-480. Trade and Technical Experience (5-5-5-5-5-5).**

Advanced Undergraduate and Graduate

- 408. Teaching Mechanical Technology (5).**
Objectives and methods; equipment and management of vocational education shops; organization of projects; recent developments in specialized areas of mechanics; in-service teaching problems. Student plans for demonstration of methods for teaching mechanical skills.
- 410. Occupational Information (3). Lec. 2, Lab. 2. Pr., junior standing, FED 320 or equivalent.**
Occupational structure, job qualifications and requirements, sources of occupational information, current trends, industrial and occupational surveys. Preparation, evaluation, and dissemination of occupational information used by teachers in vocational and technical schools.
- 413. Nature of Adult Education (5). Pr., junior standing.**
The characteristics of adults as learners and the history, philosophy, and nature of adult education; applied to specific adult groups in developing and implementing adult educational programs in basic, occupational or continuing education.
- 430. Evaluation and Training in Vocational Rehabilitation (4). Lec. 3 hours daily for 6 weeks, internship 4 weeks. Pr., departmental approval and junior standing.**
Purposes, principles and techniques of client evaluation and training; including personal, social and physical adjustment, vocational choice and selected techniques used in the evaluation and training process.

431. **Research in Evaluation and Training in Vocational Rehabilitation (4). Lec. 3** hours daily for 6 weeks, internship 4 weeks. Pr., departmental approval and junior standing.
Study of a problem using research techniques, to be selected in consultation with the supervising professor.
432. **The Instructional Program in Workshop and Rehabilitation Facilities (3). Lec. 3** hours daily for 4 weeks, internship 6 weeks. Pr., departmental approval and junior standing.
Includes program development, teaching, learning, resources, evaluation, project development and production, and supervision.
433. **Management of Vocational Rehabilitation Workshops and Facilities (3). Lec. 3** hours daily for 4 weeks, internship 6 weeks. Pr., departmental approval and junior standing.
The function of organization and administration including: federal, state, and local roles, financial support, community interaction, personnel management, and operation of facilities.
434. **Work Sample Development (5). Pr., VED 330 and junior standing.**
Development of methods of selection, standardization, and establishing norms for work samples used in vocational evaluation units.
435. **Vocational Evaluation (5). Pr., junior standing and permission of instructor.**
Evaluation techniques used in appraisal of the abilities of people to guide occupational choice. Includes use of TOWER system, work samples, on-the-job training, personal adjustment.
437. **Vocational Training and Occupational Orientation of the Mentally Retarded (5). Pr., junior standing.**
Principles for providing occupational orientation and work experience; techniques of curriculum planning, job classification and evaluation, selection, and placement; curricular activities related to work experience; community agencies and public relations.
474. **Organization of Instruction in Vocational-Technical Education (5). Pr., junior standing.**
Trade and occupational analysis; principles and procedures of identifying and selecting the skills and knowledge needed in the preparation of courses of instruction. Principles and procedures for individualizing instruction.
491. **Problems in Teaching the Disadvantaged Adult (3-5). Pr., junior standing.**
The disadvantaged adult as a learner with special emphasis upon the sociological, psychological and physiological factors that influence learning and participation in learning activities. Materials, methods and teaching techniques especially appropriate for teaching the disadvantaged adult.
602. **Teacher Education in Vocational and Adult Education (5). Pr., departmental approval.**
Designed for supervisors of student teachers, teacher educators, and other graduate students. Major emphases deal with administration of vocational education programs, research, problems which supervising teachers encounter in the student teaching program.
603. **Problems in Agricultural Occupations (5). Pr., departmental approval.**
Securing, organizing and interpreting information for guidance and teaching purposes; curriculum development; developing instruction units and planning teaching activities for on-farm and off-farm occupations.
606. **Organization and Utilization of Community Resources (5). Pr., departmental approval.**
Processes through which new ideas and innovations are utilized through community organization to maximize the effective use of physical and human resources.
608. **Administration of Vocational and Practical Arts Education (5). Pr., departmental approval.**
Prepares professional personnel for leadership positions and to relate current social demands to vocationally oriented programs. Content includes philosophy and an application of procedures in administering and supervising new and on-going programs to meet changing socio-economic conditions.
625. **Internship in Vocational and Adult Education (5-10).**
A directed practicum in agency centers or programs whereby the graduate student develops administrative and programming competencies by translating theory into practice, testing principles and evaluating on-going activities.
646. **Studies in Education (1-3). Pr., one quarter of graduate study.**
A problem using research techniques, to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)
650. **Seminar in Areas of Vocational and Adult Education (1-3), may be repeated for a maximum of 3 hours.**
Advanced graduate students and professors pursue cooperatively selected concepts and theoretical formulations.

651. **Research Studies in Vocational and Adult Education (5).**
Review, analysis and interpretation of available research with emphasis on designing new research directed toward meeting the changing educational needs of individuals pursuing educational goals not requiring a baccalaureate degree.
652. **Curriculum and Teaching in Vocational and Adult Education (5).**
Teaching practices and reappraisal of selecting experiences, methods, materials, and content for curriculum improvement in social adjustment, occupational adjustment and occupational training programs.
653. **Organization of Program in Vocational and Adult Education (2-5).** Pr., departmental approval.
Advanced Course. Program, organization and development of basic and supplementary materials for guiding educators and educational systems in the continuous improvement of curriculum and learning practices.
654. **Evaluation of Programs in Vocational and Adult Education (5).**
Evaluation and investigation of teaching effectiveness in social adjustment, occupational adjustment and occupational training with attention also given to the utilization of human and material resources and the coordination of the total school program with other educational programs in the community.
659. **Practicum in Areas of Specialization (1-10).** (May be repeated for a maximum of 10 hours.)
The practicum provides graduate students with supervised experiences in various work settings with emphasis on the application of concepts, principles and skills acquired in previous course work.
699. **Thesis Research.** (Credit to be arranged.) (May be taken more than one quarter.)

Zoology-Entomology (ZY)

Professors Arant, *Head*, Blake, Dendy, Dusi, K. L. Hays, J. M. Lawrence,
Otis, Pearson, and Swingle
Associate Professors Allison, Bass, Berger, Cunningham, Hyche,
Ivey, Lovell, Mount, Moss, Prather, and Shell
Assistant Professors Causey, Dixon, Dobie, Estes, Folkerts, Gilliland,
Greene, Harper, D. Hays, Jones, Kouskolekas, F. Lawrence, Mason, Ramsey,
Rogers, Smitherman, Speake, Valcovic, Watson, and Wilson
Instructor Cook
Research Lecturers Davis and Frandsen

With few exceptions Principles of Biology, BI 101 and Animal Biology, BI 103 are prerequisite to all courses in this department. For a description of these and other general biology courses see the section for Biology.

100. **Zoological Orientation (0).** Lec. 1. Fall.
Historical and current concepts embodied in various disciplines of the zoological sciences.
204. **Insects (3).** General elective.
Life processes, occurrence, and importance of insects. (May not be taken for credit by students who have already earned credit in a more advanced course in entomology.)
205. **Wildlife Conservation (3).** Fall. General elective.
Conservation and natural history of important wildlife animals, especially Alabama fish, amphibians, reptiles, birds, mammals. Some field trips may be required, as substitute for part of the scheduled lectures. (May not be taken for credit by students who have already earned credit in more advanced wildlife courses.)
206. **Conservation in the United States (3).** Winter, Spring, Summer. General elective.
Basic facts essential to an understanding of current problems pertaining to the conservation of our rapidly depleting natural resources such as soil, water, minerals, forest, and wildlife. Especially planned for elementary and high school teachers.
207. **Birds (3).** Lec. 3. Fall, Summer. General elective.
Birds in relation to agriculture and game management, recognition of various species as to flight, color markings, songs, and feeding habits. (May not be taken for credit by students who have already earned credit in ZY 422.)
210. **Fish Culture (3).** Lec. 3. Winter. General elective.
Construction and management of ponds, and the principles underlying fish production; also fishing methods, bait production, and the identification of the more common sport fish. (May not be taken for credit by students who have already earned credit in a more advanced course in fisheries.)
214. **Vertebrate Physiology and Anatomy (5).** Lec. 4, Lab. 3. Fall, Winter. Pr., BI 103.
Function and structure of the organ systems of the vertebrate. Aimed primarily to fill the needs of students in the School of Education. Cannot be used as a prerequisite to ZY 424.

300. **Genetics (5).** Lec. 4, Lab. 2. All quarters. Pr., BI 102 or 103 and college algebra or equivalent.
Basic genetic principles, theoretical basis for genetic systems, and modern areas of research. Laboratory work emphasizes experiments with the fly, *Drosophila*.
301. **Comparative Anatomy (5).** Lec. 3, Lab. 6. All quarters. Pr., BI 103.
Comparisons of the systems of the vertebrates.
302. **Vertebrate Embryology (5).** Lec. 3, Lab. 6. Fall, Winter, Spring. Pr., BI 103.
Consideration of the details of fertilization, cleavage, morphogenesis, and organogenesis of the amphioxus, frog, chick, pig, and human from a descriptive and analytical viewpoint. Laboratory work will consist of prepared material supplemented with available living material.
303. **Principles of Evolution and Systematics (5).** Lec. 5. Winter. Pr., BI 102 or 103.
The major processes, methods, and philosophic basis for present-day concepts of evolution and systematics.
304. **General Entomology (5).** Lec. 4, Lab. 3. Fall, Spring, Summer. Pr., BI 103.
General characteristics and habits of the orders and families of the Class Insects.
305. **Forest Entomology (3).** Lec. 2, Lab. 3. Spring. Pr., BI 103.
Principles of entomology in relation to insects of forests and forest products; recognition, life histories, and control of major insects of forests.
306. **General Animal Ecology (5).** Lec. 4, Lab. 3. Fall, Spring. Pr., 10 hours of biology or permission of instructor.
The physical and biotic environments and the interactions of these factors with animals. The organization and functions of communities and populations.
308. **Micrology (5).** Lec. 3, Lab. 6. Fall, Winter, Spring. Pr., BI 103.
Basic processes and principles of micrology. Laboratory methods of fixation, embedding, sectioning, coloring, and mounting of tissues of vertebrate and invertebrate animals.
310. **Cell Biology (5).** Lec. 4, Lab. 3. All quarters. Pr., 10 hours of General Biology.
Morphology and physiology of cell membranes, cytoplasm, and the formed elements of the cytoplasm and nucleus. Cell division, molecular transport, cellular homeostasis, and biochemical pathways of energy production.
312. **Practical Fish Culture (5).** As Arranged.
Credit will be arranged for 3 months work in a state or federal hatchery or in an approved commercial hatchery or on other phases of fish culture.
326. **Wildlife Biology (5).** Lec. 3, Lab. 6. Winter. Pr., a course in ecology.
Basic principles of the ecology of wildlife populations and their relations to natural habitat. Laboratory work will consist of practical exercises designed to acquaint the student with modern methodology and technique in studying wild bird and mammal populations.
401. **Invertebrate Zoology (5).** Lec. 3, Lab. 6. Fall, Winter, Summer. Pr., BI 103 and junior standing.
Biology, taxonomy, and ecology of invertebrate animals.
402. **Economic Entomology (5).** Lec. 4, Lab. 3. Fall, Spring, Summer. Pr., junior standing.
Consideration of the biological aspects, life histories, and control of insects.
404. **Medical Entomology (5).** Lec. 4, Lab. 3. Spring. Pr., ZY 304 and junior standing.
Insects, mites, and ticks of parasitological or medical importance to man. Emphasis placed on the role of arthropods in transmission of protozoan and other diseases and prevention of these diseases by controlling their arthropod vectors.
405. **Forest Insects (5).** Lec. 4, Lab. 3. Fall. Pr., ZY 304, 305, or 402 and junior standing.
Principal insects of forests and forest products; their importance, taxonomy, bionomics, and control. Emphasis will be placed on life histories and habits, identification by morphological characteristics and type of damage, and control by chemical, biological, and cultural or forest-management practices.
406. **Bee Culture (3).** Lec. 2, Lab. 3. Spring. Pr., BI 103 and junior standing.
Manipulation and production of bees and honey, and a consideration of bee diseases.
407. **General Insect Morphology (5).** Lec. 3, Lab. 6. Spring. Pr., ZY 304 and junior standing.
Comparative external anatomy and generalized internal structures of insects; characteristics used in taxonomy will be emphasized.
409. **Histology (5).** Lec. 3, Lab. 6. Winter, Spring, Summer. Pr., BI 103 and junior standing.
Morphology, histogenesis, regeneration and repair, and classification of tissues; arrangement of tissues in organs and systems of vertebrate animals.
410. **Systematic Entomology (5).** Lec. 2, Lab. 6. Winter. Pr., ZY 304 and junior standing.
Principles of systematics and identification of insects through orders, families, genera, and species.

411. **General Parasitology (5).** Lec. 3, Lab. 6. All quarters. Pr., BI 103 and junior standing.
Origin, adaptations, physiology, and ecology of parasites. Identification and life histories of representative parasitic protozoa, helminths, and arthropods with emphasis on host-parasite relationships. Techniques of examining animals for the presence of parasites and the proper preparation of such collections for study.
415. **Limnology (5).** Lec. 3, Lab. 6. Spring. Pr., CH 104, PS 205, BI 103 and junior standing.
Biological, chemical, and physical factors affecting aquatic life.
416. **Biological Productivity and Water Quality (3).** Lec. 1, Lab. 6. Fall. Pr., CH 208 or consent of instructor and junior standing.
Biological and chemical measures of water quality in streams and impoundments as related to fisheries. Effects of pollution, fertilization, and feeding of fish upon water quality.
- 418-19. **Experimental Heredity (3-3).** Lec. 1, Lab. 4. Fall, Winter. Pr., ZY 300 and junior standing.
A two-quarter sequence in advanced experimental methods in genetics. Research problems utilizing various laboratory organisms will extend throughout the two quarters.
420. **Human Heredity (5).** Lec. 5. Spring. Pr., ZY 300, CH 208, and junior standing.
Effects and normal and abnormal chromosome complements, the biological interaction of genes, and the effects of mutation and changes in gene frequency on human populations; problems in small sample analyses, biochemical screening of human "carriers," and the prospects for genetic engineering.
421. **Vertebrate Zoology I (5).** Lec. 3, Lab. 6. Fall, Spring, Summer. Pr., BI 103 and junior standing.
Taxonomy, ecology, and evolution of fishes, amphibians, and reptiles.
422. **Vertebrate Zoology II (5).** Lec. 3, Lab. 6. Fall, Summer. Pr., BI 103 and junior standing.
Basic taxonomy, ecology, evolution, and some biological principles of birds and mammals. Laboratory studies in radio-telemetry, bioacoustics, and population dynamics are used in addition to classical vertebrate zoology exercises.
424. **Animal Physiology (5).** Lec. 4, Lab. 3. Fall, Winter, Spring. Pr., ZY 310, CH 208, and junior standing.
Systematic study of the physiology of the nervous system, special senses, circulation, respiration, digestion, kidney function, hormonal control, and reproduction. An effort is made to acquaint the student with methods of experimentation as a means for the direct acquisition of physiological facts.
425. **Forest Wildlife Management (3).** Lec. 3. Spring. Pr., FY 420 or permission of instructor.
Principles of wildlife management as applied to forest properties. Restricted to students in forestry.
426. **Principles of Game Management (5).** Lec. 4, Lab. 3. Fall. Pr., ZY 326 and junior standing.
Fundamentals of game management theory, application, and administration.
427. **Wildlife Habitat Analysis (3).** Lec. 1, Lab. 6. Summer. Pr., ZY 426, BY 406, and junior standing.
Practical exercises in vegetation analysis, utilization studies, aerial photograph interpretation, and cover type mapping.
428. **Hatchery Management (5).** Lec. 3, Lab. 4. Spring. Pr., BI 103 and junior standing.
Operation of hatcheries for production of cold- and warm-water game fish and bait minnows; care of brood fish; methods of stocking, fertilizing, supplementary feeding, and controlling weeds; transportation of fish; control of parasites; and related hatchery problems.
429. **Quantitative Genetics (5).** Lec. 4, Lab. 3. Pr., ZY 300, BY 401 or permission of instructor.
The theory of Mendelian inheritance extended to properties of populations dependent on segregation of genes at many loci.
435. **Marine Biology (3).** Fall. Pr., acceptable chemistry background, BI 103 or equivalent, and junior standing.
Introduction to the physical, chemical, and biological characteristics of the marine environment.
436. **Management of Small Impoundments (3).** Lec. 1, Lab. 6. Summer. Pr., BI 103 and junior standing.
Consideration of the species of fish used in management of small impoundments, species balance, population balance analysis, methods of correcting unbalanced conditions, renovation of old impoundments, and related problems of water management.
437. **Fisheries Biology (3).** Pr., BI 103 and junior standing.
An introduction to the study of vital statistics of fish populations.

438. **General Ichthyology (5).** Lec. 3, Lab. 6. Fall. Pr., BI 103 and junior standing. Morphological, functional, geographical, and behavioral survey of fishes. Classification of fishes using monographs and keys. Field trips and laboratory work will emphasize local species.
439. **Aquatic Communities (5).** Lec. 2, Lab. 9. Summer. Pr., BI 102-3 and junior standing. Environmental relations of the biota of freshwater habitats.
440. **Physical Marine Geology (4½).** Lec. 2, Lab. 5. Summer only. Pr., physical and historical geology, mineralogy, and junior standing. General introduction to the physical processes on the shores of Mississippi Sound, emphasizing the erosional and depositional effects of waves and currents. Beaches and spits periodically surveyed to measure changes in shape, height, cross-section, lateral shift, and particle distribution and to observe growth and destruction of bars, cusps, spits and tide-pools. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
441. **Chemical Marine Geology (4½).** Lec. 2, Lab. 5. Summer only. Pr., physical and historical geology, mineralogy, CH 105 and CH 206, and junior standing. Supervised research in the chemistry of the waters of Mississippi Sound and geochemistry of the bottoms. Lateral, vertical and tidal changes in water composition. Analyses of core samples taken from different environments: bayous, mudflats, bars, oyster reefs, bays, tidal channels and sandy shelves. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
442. **Marine Invertebrate Zoology (9).** Lec. 5, Lab. 12. Summer only. Pr., 18 hours of biology including BI 103, and junior standing. A general study of the anatomy, life histories, distributions, and phylogenetic relationships of all marine phyla below the chordates. Laboratory and field work included. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
443. **Marine Vertebrate Zoology and Ichthyology (9).** Lec. 5, Lab. 12. Summer only. Pr., 18 hours of biology including BI 103 and junior standing. A general study of the marine chordata, including lower groups and the mammals and birds, with most emphasis on the fishes. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
444. **Marine Fisheries Biology (6).** Lec. 3, Lab. 9. Summer only. Pr., 25 hours of zoology including ZY 421, and junior standing. Survey of the principles of the subject beginning with a study of fishery landing statistics of the United States followed by other areas of the earth. The classic theory will be examined and statistical applications will be made to various Gulf of Mexico fisheries. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
445. **Fish Parasites (3).** Lec. 1, Lab. 6. Winter. Pr., ZY 411 and junior standing. The external and internal parasites of fishes, their identification, and control; laboratory studies on life histories and epidemiology of parasite populations in ponds and impoundments.
446. **Fish Diseases (3).** Lec. 1, Lab. 6. Spring. Pr., VM 200 and junior standing. Bacterial and viral diseases of fishes, their isolation, culture identification, and control.
447. **Management of Streams and Large Impoundments (3).** Lec. 3. Fall. Pr., ZY 437, or permission of instructor, and junior standing. Fish populations of streams and large impoundments and a consideration of methods for managing those populations.
450. **Zoogeography of the Vertebrates (5).** Lec. 4, Lab. 3. Winter. Pr., ZY 421 or permission of instructor and junior standing. The principles of geographic distribution of vertebrate animals.
498. **Special Problems (1-3).** Pr., senior standing. A. Zoology; B. Entomology; C. Fisheries Management; D. Wildlife Management. A student can register for a total of not more than three hours credit.

GRADUATE COURSES

601. **Insect Morphology (3).** Lec. 1, Lab. 6. Fall. Pr., ZY 407. Detailed studies of the internal structures of insects.
602. **Advanced Insect Taxonomy (5).** Lec. 1, Lab. 8. Summer, odd years. Pr., ZY 410. Principles of systematics including phylogeny with emphasis on a particular group of insects which the student may choose.
603. **Insect Physiology (5).** Lec. 3, Lab. 6. Spring, even years. Pr., ZY 424 and ZY 601. General and comparative physiology of the organ systems of insects. A minimum of two literature reviews will be made by each student during the quarter.
604. **Insect Toxicology (5).** Lec. 4, Lab. 3. Winter. Toxic action of insecticides; analysis, preparation and use of insecticides; spray residues in relation to health; research methods in insect toxicology.
605. **Ornithology (5).** Lec. 3, Lab. 6. Spring. Pr., ZY 422. Ecology and behavior of birds.
606. **Mammalogy (5).** Lec. 3, Lab. 6. Winter. Pr., ZY 422. Taxonomy, ecology, and behavior of mammals.

607. **Farm Game Management (5).** Lec. 3, Lab. 6. Fall. Pr., ZY 426.
For graduate students majoring in Game Management or Fisheries Management. Application of game management theories, techniques, and administration with special emphasis on farm game species.
608. **Forest and Range Game Management (5).** Lec. 3, Lab. 6. Winter. Pr., ZY 426.
For graduate students majoring in Game Management or Fisheries Management. Application of game management theories, techniques, and administration with special reference to forest and range game.
609. **Advanced Applied Entomology (5).** Lec. 4, Lab. 3. Spring. Pr., ZY 402.
Integrated control of the principal insects by environmental, biological, genetic, chemical, and legal means.
610. **Immature Forms of Insects (5).** Lec. 2, Lab. 6. Winter. Pr., ZY 410.
Structure and identification of immature forms of insects; methods of collecting and preserving; development and use of keys for classifying immature insects.
611. **Advanced Insect Morphology and Embryology (3).** Lec. 1, Lab. 6. Winter. Pr., ZY 601.
Insect morphology in relation to comparative embryological developments of insects.
612. **Advanced Insect Toxicology (5).** Lec. 4, Lab. 3. Spring, odd years. Pr., ZY 604.
Mode of action, mode of entry, relation of chemical structure to toxicity, and precision methods of determination of insecticides; recent developments in the field of insecticide chemistry.
613. **Insect Pathology (5).** Lec. 3, Lab. 4. Fall. Pr., VM 200, ZY 402, and consent of instructor.
The microorganisms associated with diseases in insects and their pathological effects on insects and insect populations.
614. **Physiology of the Cell (3).** Winter. Pr., ZY 310 and ZY 424.
Examination of the basic physiological processes at the cellular level with the tools and approaches of physical science.
615. **Advanced Fisheries Biology (5).** Lec. 4, Lab. 3. Summer. Pr., ZY 437.
The concepts of population dynamics and of the interaction of reproduction, growth, and mortality in fish populations. Use of these concepts in fish population management.
616. **Ichthyology (3).** Lec. 3. Winter. Pr., ZY 438 or permission of instructor.
Fishes of the world, emphasizing morphology, distribution, and life history. Review of world literature on fish systematics.
617. **Advanced Limnology (3).** Lec. 1, Lab. 6. Winter. Pr., ZY 415.
Principles and methods employed in modern limnological research.
618. **Aquaculture (3).** Winter. Pr., ZY 416.
Principles underlying aquatic productivity and levels of management as demonstrated by domestic and foreign lotic and lenitic cultures of fish and other aquatic crops.
619. **Comparative Invertebrate Physiology (5).** Lec. 4, Lab. 3. Spring. Pr., ZY 401 and permission of instructor.
The physiological mechanisms of invertebrates with special emphasis on respiration, excretion, reproduction, locomotion, nutrition, circulation, and behavior.
620. **Fish Processing Technology (5).** Lec. 3, Lab. 6. Fall. Pr., CH 208 and VM 200 or DH 410.
Chemical and biological aspects of fishery products as they are related to the use of these products for human foods; principles of preservation; unit operations in processing; packaging, storage, and distribution.
622. **History and Literature of Zoology (4).** Lec. 3, Lab. 3. Winter. Pr., graduate standing.
A historical review of the classical authors and great works in zoological literature. Laboratory will concentrate on examining and learning to use journals, abstracts, and reference materials in the library.
623. **Organic Evolution (5).** Fall. Pr., ZY 430 or ZY 300.
Evolutionary principles as illustrated by the various biological disciplines, particularly genetics, paleontology, zoogeography, and systematics in general.
627. **Immunology and Physiology of Parasites (5).** Lec. 3, Lab. 6. Winter, even years. Pr., ZY 411, VM 200, ZY 424, and consent of instructor.
Immunity mechanisms to infections of protozoan and helminth parasites. Chemical physiology of host-parasite relationship to include nutrition, metabolism, toxicity, and chemotherapy.
629. **Advanced Quantitative Genetics (5).** Lec. 4, Lab. 2. Pr., ZY 429 or equivalent.
Principles of quantitative genetics applied to breeding, emphasizing difficulties encountered in commercial breeding programs.
630. **Advanced Genetics (5).** Winter. Pr., ZY 300 and BY 401.
Non-Mendelian hereditary systems; regulation of gene action as it influences growth, differentiation, and development; the use of statistics as an investigational tool; and the status of contemporary genetic research.

631. **Biochemical Genetics (3).** Winter. Pr., ZY 300, Coreq., CH 419.
Advanced studies of gene action on the biochemical level pertaining to metabolism, differentiation, immuno-genetics, and mutagenesis. Emphasis on current research in both prokaryotic and eukaryotic systems.
632. **Helminthology (5).** Lec. 3, Lab. 6. Spring. Pr., ZY 411.
Advanced studies of the morphology, physiology, life cycles, and host-parasite relationships of helminths. Opportunity for making extensive literature studies and collections of the parasites of a particular group of animals in which the student is most interested.
634. **Protozoology (5).** Lec. 3, Lab. 6. Winter, odd years. Pr., ZY 411.
Free-living and parasitic protozoa important to agriculture, wildlife, and man. Morphology, physiology, reproduction, ecology, and life histories of parasitic forms will be emphasized.
635. **Furbearer and Waterfowl Management (5).** Lec. 3, Lab. 6. Winter. Pr., ZY 426.
For graduate students with a major or minor in wildlife management. A study of furbearer and waterfowl resources. Emphasis is placed on problems of management and utilization.
636. **Ecology and Animal Populations (3).** Fall. Pr., ZY 306.
An investigation of the balance of nature, population cycles, natural regulation of animal numbers, competition, epizootics, and the compensatory adjustments of populations to changes in the environment.
637. **Herpetology (5).** Lec. 1, Lab. 8. Spring. Pr., ZY 421.
A study of the morphology, taxonomy, ecology, and behavior of amphibians and reptiles. Laboratory collecting, preserving, and identification of local specimens will be an important consideration.
640. **Nematology (3).** Lec. 2, Lab. 3. Spring. Pr., ZY 401 or 411.
Study and identification of the free-living soil- and aquatic nematodes and of the insect-parasitic nematodes. Detailed consideration of aspects of nematode morphology, reproduction, development, behavior, physiology, and ecology.
641. **Field Entomology (3).** Lec.-Dem. 4. Fall or Spring. Pr., graduate standing.
Identification of more important orders, families, and species of insects; a consideration of morphology, physiology, and development of insects; control of major pests. A collection of at least 100 species of economic insects will be required.
642. **Chemical Control of Insects (3).** Lec.-Dem. 4. Winter. Pr., graduate standing.
Properties of insecticides, including toxic action in living organisms; major uses and methods of application of formulations; hazards involved in handling insecticides; spray residues in relation to marketability of crops.
645. **Neurobiology (5).** Lec. 3, Lab. 6. Winter. Pr., ZY 424.
Morphology, physiology, and evolution of the central, autonomic, and neurohormonal systems of the vertebrate.
646. **Renal and Digestive Physiology (5).** Lec. 4, Lab. 3. Fall. Pr., ZY 424.
A comprehensive study of renal and digestive mechanisms for the qualified student in animal physiology.
647. **Endocrinology (5).** Spring. Pr., ZY 424 and AH 419.
A comprehensive treatment of the classical and modern literature of endocrinology for the qualified student in animal biology.
648. **Experimental Endocrinology (5).** Spring. Pr., ZY 647 or taken concurrently.
Laboratory studies of endocrine control mechanisms utilizing surgical, bioassay, biochemical assay, histochemical, and autoradiographic methods and techniques.
693. **Seminar. (Credit to be arranged.)**
697. **Problems in Marine Zoology (4-9).** All year. Pr., ZY 442-3.
Supervised research on specific problems in marine zoology for graduates. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
698. **Special Problems (2-5).** All quarters.
A. Zoology; B. Entomology; C. Apiculture; D. Parasitology; E. Physiology; F. Fisheries; G. Wildlife.
699. **Research and Thesis. (Credit to be arranged.)**
799. **Doctoral Research and Dissertation. (Credit to be arranged.)**

Faculty and Staff

1969-70

(The parenthetical designation after a faculty member's title indicates his department, except in the School of Pharmacy which contains no formal departments. The first date after the title indicates the year of first appointment to any position in the institution; the second, the year of appointment to present rank.)

GENERAL ADMINISTRATIVE OFFICERS

- PHILPOTT, HARRY M. _____ *President*, 1965
A.B., Washington and Lee University; Ph.D., Yale University; D.D. (Hon.), Stetson University; LL.D. (Hon.), Washington and Lee University; LL.D. (Hon.), University of Florida.
- BAILEY, WILFORD S. _____ *Vice President for Academic and Administrative Affairs*, 1942, 1966
D.V.M., M.S., Auburn University; Sc.D., Johns Hopkins University.
- LANHAM, BEN T., JR. _____ *Vice President for Research*, 1939, 1966
B.S., Clemson University; M.S., University of Tennessee; Ph.D., Michigan State University.
- ROBERTSON, FRED R. _____ *Vice President for Extension*, 1959, 1966
B.S., M.S., University of Tennessee; Dr.P.A., Harvard University.
- VALLERY, H. F. _____ *Assistant to the President*, 1950, 1960
B.A., M.A., Louisiana State University; M.A., Ed.D., Columbia University.
- BEARD, G. W. _____ *Director of Athletics*, 1937, 1951
B.S., Auburn University.
- BROWN, MORGAN W. _____ *Director of Student Health Service*, 1950
B.S., University of Alabama; M.D., Tulane School of Medicine.
- CANTRELL, CLYDE H. _____ *Professor and Director of Libraries*, 1944, 1959
A.B., A.B.L.S., M.A., University of North Carolina; Ph.D., University of Illinois.
- CATER, KATHARINE C. _____ *Dean of Women and Social Director*, 1946
A.B., Limestone College; M.A., Mercer University; M.S., Syracuse University; Litt.D., Limestone College.
- DODGE, ENGEL H. _____ *Director of Contract and Grant Development*, 1968
B.S., Purdue University; M.S., Washington University.
- FOY, JAMES E. _____ *Dean of Student Affairs, and Associate Professor (Counselor Education)*, 1950, 1960
A.B., M.A., University of Alabama; Ph.D., Michigan State University.
- FUNCHESS, LINWOOD E. _____ *Director of Buildings and Grounds*, 1957
B.S., Auburn University; M.S., Cornell University.
- GARNER, JAMES M., JR. _____ *Radiological Safety Officer*, 1966
B.S., Daniel Baker College.
- GUERIN, WILLIAM H. _____ *Campus Planner and Architect*, 1967
B.Arch., University of Florida.
- INGRAM, W. TRAVIS _____ *Business Manager and Treasurer*, 1925, 1953
- PARKER, W. VANN _____ *Dean of The Graduate School and Professor (Mathematics)*, 1950, 1953
A.B., M.A., University of North Carolina; Ph.D., Brown University.
- SARVER, JOSEPH B. _____ *Executive Secretary of Alumni Association, Director of Auburn Development Program*, 1951, 1960
B.S., Auburn University.
- TINGHER, WILBUR A., JR. _____ *Director of Educational Services and Associate Professor (Educational Administration)*, 1958, 1966
A.B., M.A., Ed.D., University of Kentucky.
- WARMAN, JAMES C. _____ *Director of Water Resources Research Institute, and Associate Professor (Civil Engineering)*, 1965, 1970
A.B., M.S., West Virginia University.
- WEGENER, EDWARD P. _____ *Director of Educational Television*, 1954
B.S., University of Minnesota.

- WHITE, J. HERBERT *Director of University Relations*, 1965
B.S., Auburn University.
- WHITE, LOUIS EDWARD *Conference Director*, 1962, 1969
B.S., Auburn University; M.S., University of Alabama; Ed.D., North Carolina State University.
- WILLIAMS, LELAND H. *Director of Computer Center and*
Associate Professor (Mathematics), 1966
B.S., University of South Carolina; M.S., University of Georgia; Ph.D., Duke University.

ACADEMIC ADMINISTRATIVE OFFICERS AND FACULTY

- SMITH, E. V. *Dean of School of Agriculture and Director of*
Agricultural Experiment Station, 1929, 1951
B.S., Auburn University; M.S., Ph.D., Iowa State University.
- MCPHEETERS, EDWIN K. *Dean of School of Architecture and Fine Arts*
and Professor (Architecture), 1969
B.A., Oklahoma State University; M.F.A. in Architecture, Princeton University.
- HOBBS, EDWARD H. *Dean of School of Arts and Sciences and*
Professor (Political Science), 1967
A.B., University of North Carolina; M.A., University of Alabama; Ph.D., Harvard University.
- TURNER, OTHEL D. *Dean of School of Business*, 1968
B.A., University of Tulsa; LL.B., University of Arkansas; M.B.A., Ph.D., University of Texas.
- PIERCE, TRUMAN M. *Dean of School of Education*, 1955
Ph.B., Piedmont College; M.A., University of Alabama; Ph.D., Columbia University.
- COX, J. GRADY *Dean of School of Engineering, Director of Engineering*
Experiment Station and Professor (Industrial Engineering), 1949, 1968
B.S., M.S., Auburn University; Ph.D., Purdue University.
- COMPTON, NORMA H. *Dean of School of Home Economics and*
Professor (Consumer Affairs), 1968
A.B., George Washington University; M.S., Ph.D., University of Maryland.
- COKER, SAMUEL T. *Dean of School of Pharmacy*, 1959
B.S., Auburn University; M.S., Ph.D., Purdue University.
- GREENE, JAMES E. *Dean of School of Veterinary Medicine*, 1937, 1958
D.V.M., M.S., Auburn University.
- ARNEY, LOUIS O. *Professor (Art)*, 1950, 1967
B.S., Art, M.A., Auburn University.
- ACHEE, NICHOLAS, JR. *Head, Science-Technological Division and*
Associate Professor, Library, 1968, 1969
B.A., M.A., M.S.L.S., Louisiana State University.
- ADAMS, CHRISTINE A. *Instructor (Secondary Education)*, 1969
B.S., Auburn University; M.A., University of Alabama.
- ADAMS, CLEVELAND L. *Professor and Head (Textile Engineering)*, 1952
B.T.E., Auburn University.
- ADAMS, FRED *Professor (Agronomy & Soils)*, 1955, 1965
B.S., M.S., Louisiana State University; Ph.D., University of California.
- ADAMS, GWENDOLYN J. *Instructor (Elementary Education)*, 1969
B.A., Birmingham Southern College; M.A., Syracuse University.
- ADAMS, JAMES W. *Associate Professor (Marketing & Transportation)*, 1969
B.B.A., M.B.A., Georgia State University.
- ADAMS, MURRAY, JR. *Instructor (Sociology)*, 1964, 1969
B.A., M.A., University of Mississippi.
- ADERHOLDT, ROBERT W. *Instructor (Mechanical Engineering)*, 1969
B.S., M.S., Auburn University.
- AKALIN, TEKIN *Visiting Professor (Architecture)*, 1969
M. of Arch., Fine Arts Academy, Istanbul, Turkey.
- ALBAN, EDWARD *Instructor (Economics & Geography)*, 1969
A.B., University of Georgia.
- ALBERT, R. A., JR. *Assistant Professor (Small Animal Surgery*
& Medicine), 1962, 1966
D.V.M., M.S., Auburn University.
- ALEXANDER, HERMAN D. *Associate Professor (Physiology,*
& Pharmacology), 1950, 1966
B.S., M.S., Ph.D., Auburn University.
- ALEXANDER, MILTON J. *Associate Professor (Management)*, 1968
B.S., University of Illinois; M.B.A., St. Louis University; D.B.A., Georgia State College.

- ALFORD, WILLIAM L. _____ *Professor (Physics)*, 1952, 1964
A.B., Vanderbilt University; M.S., Ph.D., California Institute of Technology.
- ALLEN, CONRAD M. _____ *Associate Professor (Counselor Education)*, 1969
B.S., University of Alabama; M.A., University of Houston; Ph.D., University of Southern Mississippi.
- ALLEN, ELIZABETH G. _____ *Assistant Professor (Elementary Education)*, 1969
B.A., University of Alabama; M.Ed., Ph.D., University of Southern Mississippi.
- ALLEN, JAMES W., JR. _____ *Instructor (English)*, 1967
B.A., M.A., University of Florida.
- ALLEN, NOEL W., JR. _____ *Instructor (Economics & Geography)*, 1969
B.A., M.B.A., Auburn University.
- ALLEN, WARD SYKES _____ *Associate Professor (English)*, 1964
B.A., M.A., Ph.D., Vanderbilt University.
- ALLEN, WILLIAM H., JR. _____ *Associate Professor (Management)*, 1966
A.B., Centre College; LL.B., M.A., University of Alabama; B.D., Union Theological Seminary.
- ALLEY, ALVIN D. _____ *Assistant Professor (Secondary Education)*, 1966
B.A., M.A., Ph.D., Florida State University.
- ALLEY, J. LEE _____ *Lecturer (Microbiology)*, 1967
D.V.M., Auburn University.
- *AMAGHER, RICHARD E. _____ *Professor (English)*, 1957, 1965
A.B., Ohio University; Ph.D., University of Pittsburgh.
- AMLING, HARRY J. _____ *Professor (Horticulture)*, 1958, 1968
B.S., Rutgers University; M.S., University of Delaware; Ph.D., Michigan State University.
- AMOSS, JOHN W. _____ *Instructor (Electrical Engineering)*, 1969
B.E.E., Auburn University; M.S.E.E., Georgia Institute of Technology.
- ANDELSON, ROBERT V. _____ *Associate Professor (Philosophy)*, 1965, 1969
A.A., Los Angeles City College; A.B., University of Chicago; A.M., Ph.D., University of Southern California.
- ANDERS, WILLIAM T., JR. _____ *Assistant Professor (Economics & Geography)*, 1969
B.A., M.A., Ph.D., University of Alabama.
- ANDERSON, GEORGE B. _____ *Assistant Professor (Military Science)*, 1967
B.S., Clemson University; Lt. Colonel, U.S. Army.
- ANDERSON, JOEL I. _____ *Assistant Professor (Vocational & Adult Education)*, 1967
B.S.E., M.R.C., University of Florida.
- ANDREWS, WARREN M. _____ *Associate Professor (Physics)*, 1961, 1970
B.S., Auburn University; M.S., Vanderbilt University; M.S., Ph.D., University of California.
- ANSON, CHARLES P. _____ *Professor (Economics & Geography)*, 1946
A.B., University of Wisconsin; M.A., Ohio State University; Ph.D., University of North Carolina.
- ANTHONY, W. B. _____ *Professor (Animal Science)*, 1953, 1955
B.S., University of Illinois; M.S., Texas A&M University; Ph.D., Cornell University.
- ARANT, FRANK S. _____ *Professor and Head (Zoology-Entomology)*, 1926, 1969
B.S., M.S., Auburn University; Ph.D., Iowa State University.
- ASKEW, RAYMOND F. _____ *Associate Professor (Physics), and Acting Director,
Nuclear Science Center*, 1960, 1969
B.S., Birmingham-Southern College; M.S., Ph.D., University of Virginia.
- ASKEW, WILLIAM C. _____ *Assistant Professor (Chemical Engineering)*, 1967
B.S., M.S., Auburn University; Ph.D., University of Florida.
- ATKINS, ALWYN J. _____ *Professor and Head (Secondary Education)*, 1956, 1964
B.S., University of Chattanooga; M.S., Ph.D., University of North Carolina.
- ATKINS, GEORGE A. _____ *Assistant Football Coach*, 1956
B.S., Auburn University.
- ATTLEBERGER, MARIE _____ *Associate Professor (Microbiology)*, 1947, 1959
D.V.M., M.S., Auburn University; Ph.D., University of Alabama.
- ATWELL, CHARLES A. _____ *Assistant Professor (Educational Administration)*, 1969
B.S.E., M.E.D., Ed.D., University of Florida.
- *AUTREY, K. M. _____ *Professor and Head (Dairy Science)*, 1947
B.S., Louisiana State University; M.S., Ph.D., Iowa State University.
- BAGGETT, WILLIAM C., JR. _____ *Instructor (Art)*, 1968
B.F.A., Auburn University.
- BAGWELL, JAMES E. _____ *Assistant Professor (Geography)*, 1950, 1956
B.S., M.S., University of North Carolina.

*On leave.

- BAIRD, THOMAS R. *Instructor (Marketing & Transportation)*, 1968
B.A., Lycoming College; M.B.A., East Tennessee State University.
- BAKER, J. MARSHALL *Professor (Chemistry)*, 1957, 1965
B.S., Missouri Valley College; M.S., Ohio State University; Ph.D., University of Missouri.
- BAKER, RICHARD ALBERT *Assistant Professor (Vocational & Adult Education)*, 1964
B.S., M.S., Auburn University; Ed.D., Oklahoma State University.
- BAKER, RICHARD J. *Assistant Professor (Vocational & Adult Education)*, 1968
B.A., University of Louisville; M.A., George Peabody College for Teachers.
- BALL, RICHARD WILLIAM *Professor (Mathematics)*, 1954, 1960
B.A., M.A., Ph.D., University of Illinois.
- BARBIN, ALLEN RAY *Professor (Mechanical Engineering)*, 1961, 1967
B.S.M.E., Lamar State College of Technology; M.S.M.E., Texas A&M University; Ph.D., Purdue University.
- BARKSDALE, JELKS *Associate Professor (Chemistry)*, 1946, 1957
B.S., M.S., University of Alabama; Ph.D., Columbia University.
- BARKSDALE, ROBBIE A. *Assistant Professor and Catalog Librarian*,
Library, 1949, 1969
A.B., University of Montevallo; B.S., M.S., Columbia University.
- BARNES, JAMES R. *Instructor (Vocational & Adult Education)*, 1969
B.S., M.S., Auburn University.
- BARRINGTON, WILLIAM NORMAN *Instructor (Health, Physical
Education & Recreation)*, 1963
B.S., Auburn University; M.S., Peabody College.
- BARTLELLS, JAN E. *Assistant Professor of Radiology (Veterinary Medicine)*, 1967
B.S., Oregon State University; D.V.M., Washington State University; M.S., University of Guelph.
- BASKERVILL, MARGARET M. *Associate Professor (Mathematics)*, 1943, 1965
A.B., Randolph-Macon Women's College; M.A., University of Michigan; Ph.D., Auburn University.
- BASS, MAX H. *Associate Professor (Zoology-Entomology)*, 1957, 1967
B.S., Troy State University; M.S., Ph.D., Auburn University.
- BASS, MERLE F. *Instructor (Mathematics)*, 1957, 1969
B.S., Troy State University; M.S., Auburn University.
- BEALS, HAROLD O. *Associate Professor (Forestry)*, 1960, 1969
B.S.F., M.S., Ph.D., Purdue University.
- BEAN, PHILLIP W. *Instructor (Mathematics)*, 1967
B.S., M.S., Auburn University.
- *BEARD, ATHA *Assistant Professor (Accounting & Finance)*, 1965, 1969
B.S., M.B.A., Auburn University.
- BEARNSON, BARBARA B. *Nursery School Teacher (Family &
Child Development)*, 1969
B.S., Brigham Young University.
- BEARNSON, LEROY W. *Instructor (Electrical Engineering)*, 1969
B.S.E.E., University of Utah; M.S.E.E., Syracuse University.
- BEASLEY, LOU C. *Instructor (Industrial Engineering)*, 1969
B.S., Mississippi College; M.S., Auburn University.
- BECKER, ROBERT C. *Instructor (Accounting & Finance)*, 1968
B.B.A., University of Minnesota; M.B.A., Auburn University.
- BECKETT, SIDNEY DWAYNE *Associate Professor (Physiology &
Pharmacology)*, 1966
B.S., Mississippi State University; D.V.M., M.S., Auburn University; Ph.D., University of Missouri.
- BEKUS, ALBERT J. *Instructor (English)*, 1968
A.B., Florence State University; M.A., Auburn University.
- BELL, SIDNEY C. *Associate Professor (Agricultural Economics &
Rural Sociology)*, 1956, 1965
B.S., M.S., Auburn University; Ph.D., Michigan State University.
- BELSER, THOMAS A., JR. *Professor (History)*, 1957, 1968
B.A., M.A., Ph.D., Vanderbilt University.
- BENNETT, ARTHUR G. *Associate Professor (Aerospace Engineering)*, 1968
B.S., University of Michigan; M.S., Ph.D., Purdue University.
- BENNETT, RALPH BLOUNT *Alumni Associate Professor (Mathematics)*, 1966, 1969
B.S., Illinois Institute of Technology; M.A., Ph.D., University of Tennessee.
- BENSON, CARL *Professor (English)*, 1947, 1963
B.S., M.A., University of Texas; Ph.D., University of Illinois.

- BENSON, GEORGE L. *Instructor (Botany & Plant Pathology)*, 1969
B.S., M.S., University of South Carolina.
- BENTLEY, CHARLES A. *Associate Professor (Music)*, 1949, 1957
B.S.M., Baldwin-Wallace College; M.A., Professional Diploma, "Specialist in Music Education," Columbia University.
- BENTLEY, CHARLES S. *Assistant Dean, Student Affairs*, 1951, 1968
B.S., M.S., Auburn University.
- BENZ, GERALD W. *Assistant Professor (Pathology & Parasitology)*, 1967
B.S., D.V.M., Purdue University; M.S., Ph.D., University of Wisconsin.
- BERGER, ROBERT S. *Associate Professor (Zoology-Entomology)*, 1968
B.S., M.S., Texas A&M University; Ph.D., Cornell University.
- BICE, LAWRENCE NEAL *Assistant Professor (Accounting & Finance)*, 1968
B.S., M.A., University of Alabama.
- BIBLIS, EVANGELOS J. *Associate Professor (Forestry)*, 1965
B.F., University of Thessaloniki; M.F., D.F., Yale University.
- BLACKSTONE, JOHN H. *Professor (Agricultural Economics & Rural Sociology)*, 1938, 1953
B.S., M.S., Auburn University.
- BLAKE, GEORGE H., JR. *Professor (Zoology-Entomology)*, 1947, 1965
B.S., M.S., Auburn University; Ph.D., University of Illinois.
- BLAKNEY, WILLIAM G. G. *Associate Professor (Civil Engineering)*, 1958, 1961
B.S., Nova Scotia Technical College; M.Sc., Ohio State University.
- BOCK, DOUGLAS G. *Assistant Professor (Speech)*, 1969
A.B., Bradley University; M.A., Ph.D., Southern Illinois University.
- BOCK, EMILY H. *Assistant Professor (Speech)*, 1969
A.B., M.A., Bradley University; Ph.D., Southern Illinois University.
- BOLAND, JOSEPH S., III *Assistant Professor (Electrical Engineering)*, 1961, 1968
B.S.E.E., M.S.E.E., Auburn University; Ph.D.E.E., Georgia Institute of Technology.
- BOND, ALETHA WILSON *Instructor (Health, Physical Education & Recreation)*, 1967
A.B., Coker College; M.Ed., Auburn University.
- BOND, EVELYN BRANCH *Assistant Professor (Management)*, 1965, 1968
B.S., Betty College; M.Ed., Auburn University.
- BOND, GORDON C. *Assistant Professor (History)*, 1967
B.S., M.A., Ph.D., Florida State University.
- BOSTON, ROBERT G. *Instructor (Aerospace Engineering)*, 1968
B.S., M.S., Auburn University.
- BOSTON, ROBERT O. *Associate Professor (Economics & Geography)*, 1950, 1959
B.S., M.S., University of Alabama.
- BOTTA, JAMES A., JR. *Assistant Professor (Physiology & Pharmacology)*, 1967
D.V.M., Auburn University; M.S., Ph.D., Purdue University.
- BOTTOMS, DAVID NEWTON *Associate Professor (Vocational & Adult Education)*, 1941, 1947
B.S., M.S., Auburn University.
- BOWMAN, MARY B. *Instructor (Foundation of Education)*, 1969
A.B., Huntingdon College; M.Ed., Auburn University.
- BOYD, ROBERT P., JR. *Assistant Professor (Industrial Engineering)*, 1968
B.S., Auburn University.
- BRABHAM, ROBERT E. *Assistant Professor (Vocational & Adult Education)*, 1969
B.S., University of South Carolina; M.S., Richmond Professional Institute; Ph.D., University of Missouri.
- BRADFORD, JOHN H. *Instructor (Sociology)*, 1960
B.A., David Lipscomb College; M.S.W., University of Tennessee.
- BRADLEY, MARY HART *Assistant Dean of Women, Social Center*, 1962
B.S., M.A., University of Alabama.
- BRANDT, PAUL C. H. *Professor and Head (Building Technology)*, 1968, 1969
B.S., M.S., University of Illinois.
- BRANSFORD, THOMAS L. *Professor (Civil Engineering)*, 1965
B.E., C.E., Vanderbilt University.
- BRESSLER, RAY B., JR. *Assistant Professor (Management)*, 1968
B.B.A., University of Cincinnati; M.B.A., Indiana University.
- BREWER, ROBERT N. *Assistant Professor (Poultry Science)*, 1968
B.S., M.S., Auburn University; Ph.D., University of Georgia.
- BREYER, BERNARD R. *Professor (English)*, 1949, 1966
B.A., Vanderbilt University; M.A., Louisiana State University; Ph.D., University of Virginia.

- BRIDGES, SANDRA LOUISE. *Instructor (Health, Physical Education & Recreation)*, 1966
B.S., Purdue University; M.S., Indiana University; Guidance and Counseling Degree, Indiana University.
- BRITT, ALFRED L. *Associate Professor (Pathology & Parasitology)*, 1967
D.V.M., Ph.D., Michigan State University; M.P.H., University of Michigan.
- BRITT, LARRY A. *Instructor (Large Animal Surgery & Medicine)*, 1969
B.S., M.S., University of Florida; D.V.M., Auburn University.
- BRITTIN, NORMAN A. *Hollifield Professor (English)*, 1948, 1967
A.B., A.M., Syracuse; Ph.D., University of Washington.
- BROOKS, GEORGE H. *Professor and Head (Industrial Engineering)*, 1966
B.I.E., University of Florida; M.S.I.E., Ph.D., Georgia Institute of Technology.
- BROWN, CAROLYN B. *Instructor (English)*, 1967
B.A., M.A., Louisiana State University.
- BROWN, CHARLES D. *Assistant Professor (Philosophy)*, 1967
B.A., M.A., Louisiana State University; Ph.D., University of Missouri.
- BROWN, HELEN WEAVER *Assistant Professor (Management)*, 1959, 1964
B.S., Alabama College; M.Ed., Auburn University.
- BROWN, JACK BETHEL *Assistant Professor (Mathematics)*, 1967
B.A., M.A., Ph.D., University of Texas.
- BUCHANAN, GALE ARLOE *Assistant Professor (Agronomy & Soils)*, 1965
B.S., M.S., University of Florida; Ph.D., Iowa State University.
- BUDENSTEIN, PAUL P. *Associate Research Professor (Physics)*, 1958, 1962
B.A., Temple University; M.S., Ph.D., Lehigh University.
- BURKHALTER, JOHNNY E. *Assistant Professor (Aerospace Engineering)*, 1965, 1968
B.A.E., M.S., Auburn University.
- BURKS, ROBERT L. *Instructor (Economics & Geography)*, 1968
B.S., M.S., Auburn University.
- BURNETT, PAUL C. *Professor (English)*, 1948, 1964
B.A., Louisiana Polytechnic Institute; M.A., Louisiana State University.
- BURNS, MOORE J. *Professor (Physiology & Pharmacology)*, 1950, 1962
B.S., M.S., Auburn University; Ph.D., Purdue University.
- BURTON, JOSEPH C. *Instructor (Vocational & Adult Education)*, 1968
B.S., M.S., Auburn University.
- BURTON, LEONARD PATTILLO *Professor and Head (Mathematics)*, 1954, 1965
A.B., M.A., University of Alabama; Ph.D., University of North Carolina.
- BUSCH, COURTNEY C. *Instructor (Mechanical Engineering)*, 1965
B.S., M.S., Tulane University.
- BUSHEY, JOHN MICHAEL *Assistant Professor (Economics & Geography)*, 1967, 1969
B.S., University of Pennsylvania; M.S., Auburn University.
- BUSSELL, WILLIAM H. *Professor (Mechanical Engineering)*, 1965
B.M.E., M.S.E., University of Florida; Ph.D., Michigan State University.
- BUTLER, ALLEN DEXTER *Assistant Professor (English)*, 1927, 1955
A.B., M.A., University of North Carolina.
- BUTLER, WILLIAM H. *Assistant Professor (Physics)*, 1969
B.S., Auburn University.
- BUTZ, ROBERT K. *Professor (Mathematics)*, 1950, 1963
B.S., Colorado State University; M.S., Ph.D., University of Georgia.
- BYARD, FREDERICK B. *Assistant Professor (Military Science)*, 1966, 1968
B.S., University of Southern Mississippi; Captain, U.S. Army.
- CADENHEAD, A. KENNETH *Associate Professor (Elementary Education)*, 1963, 1969
B.S., M.Ed., University of Georgia; Ed.D., Auburn University.
- CAHOON, DELWIN D. *Alumni Associate Research Professor (Psychology)*, 1965, 1969
B.A., Ph.D., University of Minnesota.
- CAHOON, ELIZABETH J. *Assistant Professor (Geology)*, 1967, 1968
B.A., Ph.D., University of Minnesota.
- CAIN, JOHN L. *Director, Engineering Extension Service*, 1962
B.Ch.E., Georgia Institute of Technology.
- CAIRNS, ELDON J. *Professor (Botany & Plant Pathology)*, 1954, 1955
B.A., M.A., University of California (Los Angeles); Ph.D., University of Maryland.
- CALDER, JAMES RICHARD *Assistant Professor (Mathematics)*, 1963
B.S., Trinity of Texas; M.A., Ph.D., University of Texas.
- CALDER, ROBERT WESLEY *Assistant Professor (Music)*, 1966
B.S., Temple University; M.Mus., University of Michigan; Ed.D., Pennsylvania State University.

- CALLAN, ALLIE WILLIS, JR. *Assistant Professor (Aerospace Engineering)*, 1968
B.S., University of Maryland; M.S., George Washington University.
- CAMPBELL, GARY G. *Instructor (Political Science)*, 1969
B.A., Carleton College; LL.B., Yale University.
- CAMPBELL, KENNETH *Professor and Head (Theatre)*, 1967
M.A., University of Glasgow, Scotland; M.A., Catholic University; Ph.D., University of Denver.
- CAMPBELL, LESLIE C. *Assistant Dean, School of Arts and Sciences*, 1968
B.S., Mississippi State University; M.A., Ph.D., University of Mississippi.
- CAMPBELL, NORMA *Instructor (Sociology)*, 1969
B.A., Carleton College.
- CANNON, F. LEE *Assistant Professor (Nutrition & Foods)*, 1948, 1953
B.S., M.S., West Virginia University.
- CANNON, ROBERT Y. *Professor (Dairy Science)*, 1948, 1960
B.S., Iowa State University; M.S., Ohio State University; Ph.D., University of Wisconsin.
- CAPPS, JOHN ROBERT *Instructor (Learning Resources)*, 1968
B.F.A., Auburn University.
- CAPPS, JULIUS DANIEL *Research Professor (Chemistry)*, 1934, 1953
B.S., M.S., Auburn University; Ph.D., University of Nebraska.
- CARLSON, RODNEY L. *Instructor (Economics & Geography)*, 1966
B.S.C.E., Penn State; M.B.A., Auburn University.
- CARR, HOWARD E. *Professor and Head (Physics)*, 1948, 1953
B.S., Auburn University; M.A., Ph.D., University of Virginia.
- CARRINGTON, THOMAS J. *Professor and Head (Geology)*, 1967
B.S., M.S., University of Kentucky; Ph.D., Virginia Polytechnic Institute.
- CARROLL, CHESTER C. *Professor and Head (Electrical Engineering)*, 1965, 1969
B.S.E.E., M.S.E.E., Ph.D., University of Alabama.
- CARTER, MARION BERNARD *Instructor (Electrical Engineering)*, 1967
B.S.E.E., M.S.E.E., University of Tennessee.
- CARTER, MARY FRANCES *Assistant Professor (Architecture)*, 1964
A.B., University of Georgia; M.A., Columbia University; Diploma, Parson School of Design.
- CARTER, MASON C. *Alumni Associate Professor (Botany & Plant Pathology)*, 1960, 1969
B.S., M.S., Virginia Polytechnic Institute; D.F., Duke University.
- CASTRO, DRUCILLA J. *Instructor (Foreign Languages)*, 1967
B.A., Auburn University; M.A., University of Alabama.
- CAUSEY, MILES K. *Assistant Professor (Zoology-Entomology)*, 1968
B.S., M.S., Ph.D., Louisiana State University.
- CHAMBLISS, OYETTE L. *Associate Professor (Horticulture)*, 1970
B.S., M.S., Auburn University; Ph.D., Purdue University.
- CHAPMAN, LARRY F. *Instructor (Health, Physical Education & Recreation)*, 1965
B.S., M.S., Auburn University.
- CHASTAIN, E. D., JR. *Professor (Economics & Geography)*, 1956, 1963
B.S., Clemson University; M.S., Cornell University; Ph.D., Purdue University.
- CHASTAIN, MARIAN F. *Associate Professor (Nutrition & Foods)*, 1956, 1966
B.S., Cedar Crest College; M.S., Ph.D., Florida State University.
- CHEATHAM, BEN H., JR. *Assistant Professor (Secondary Education)*, 1969
B.A., M.Ed., Ed.D., University of Florida.
- CHERELLIA, GEORGE *Instructor (Health, Physical Education, & Recreation)*, 1968
B.S., University of Houston; M.Ed., Rutgers University.
- CHIEN, MILLIE MINHSUI *Instructor (Pharmacy)*, 1969
B.S., National Taiwan University; M.S., University of Nebraska.
- CHO, YUNG *Assistant Professor (Poultry Science)*, 1969
B.S., National Taiwan University; M.S., Auburn University.
- CHRISTEN, HAROLD EDWIN *Professor (Forestry)*, 1946, 1951
B.S., University of Connecticut; M.F., Yale University; Ph.D., Michigan State University.
- CHUN, MYUNG S. *Computer Scientist, Computer Center, Instructor (Industrial Engineering)*, 1969
B.S., Seoul National University; B.S., Auburn University; M.S., Washington State University.
- CICCARELLI, ORAZIO *Assistant Professor (History)*, 1969
B.S., St. Francis College; M.A., Ph.D., University of Florida.
- CLARK, CARL H. *Professor and Head (Physiology & Pharmacology) and Professor (Animal Health Research)*, 1953, 1959
B.S., D.V.M., Washington State University; M.S., Ph.D., Ohio State University.

- CLARK, EDWARD M. *Associate Professor (Botany & Plant Pathology)*, 1956, 1962
B.S., M.S., Ph.D., University of Minnesota.
- CLARK, REUEL STAFFORD *Coordinator (Field Services), Assistant Professor (Educational Administration)*, 1968, 1969
A.B., Berry College; M.Ed., University of Georgia; Ed.D., Auburn University.
- CLARK, ROY GARLAND *Specialist (Management)*, 1962
B.S., M.S., University of Southern Mississippi.
- CLAYTON, WILLIAM C. *Assistant Professor (Vocational & Adult Education)*, 1969
B.S., University of Alabama; M.S., Florida State University.
- CLEMENT, WALTER BATES *Assistant Professor (Engineering Graphics)*, 1965
B.S., Clemson University; M.S., Illinois Institute of Technology.
- CLEVELAND, ALLEN D. *Extension Associate (Educational Administration)*, 1969
B.S., Jacksonville State University; M.S., Auburn University.
- CLEVELAND, ROBERT *Assistant Professor (Naval Science)*, 1967
B.A., Dartmouth College; Major, U.S.M.C.
- CLONTS, HOWARD A., JR. *Assistant Professor (Agricultural Economics & Rural Sociology)*, 1968
B.S., M.S., Auburn University; Ph.D., Virginia Polytechnic Institute.
- COBB, CHARLES N. *Professor (Industrial Engineering)*, 1930, 1961
B.S., Clemson University; B.I.E., M.S., Auburn University.
- COCHRAN, JOHN E. *Instructor (Aerospace Engineering)*, 1967, 1969
B.S., M.S., Auburn University.
- CODY, REYNOLDS M. *Associate Professor (Microbiology)*, 1961, 1965
B.S., University of Tennessee; M.S., Ph.D., Mississippi State University.
- COLAIANNI, ARTHUR *Teaching Associate (Music)*, 1968, 1969
B.Mus.Ed., Murray State University; M.A., Western Reserve University.
- COLBURN, CHARLES B. *Professor and Head (Chemistry)*, 1968
B.S., Kansas State University; Ph.D., University of Utah.
- COLEMAN, ROBERT J. *Instructor (Electrical Engineering)*, 1968
B.S.E.E., M.S.E.E., Auburn University.
- COLEMAN, WILLIAM P. *Associate Professor (Mathematics)*, 1964, 1968
B.S., Southwest Texas State College; M.A., Ph.D., University of Texas.
- COLLINS, JAMES CARROL *Instructor (Animal Science)*, 1965
B.S., M.S., Mississippi State University.
- COMEAU, LEO A. *Assistant Professor (Drama)*, 1967
B.A., New Mexico State University; M.A., Denver University.
- CONIGLIO, JOSEPH G. *Assistant Professor (Aerospace Studies)*, 1968
B.A., George Washington University; Captain, U.S. Air Force.
- CONNALLY, JOSEPH H. *Assistant Football Coach*, 1952
B.S., University of Georgia.
- CONNER, PAUL C. *Instructor (Industrial Laboratories)*, 1964
B.S., M.Ed., Auburn University.
- CONWAY, WILLIAM J. *Instructor (Sociology)*, 1969
A.B., Jacksonville State University.
- COOK, ELIZABETH F. *Instructor (Zoology-Entomology)*, 1969
B.A., Birmingham-Southern College.
- COOLEY, IRWIN D. *Associate Professor (Mechanical Engineering)*, 1962, 1966
B.S.C.E., Duke University; M.S.E., University of Florida; Ph.D., University of Texas.
- COOPER, ARTHUR WIGGINS *Research Lecturer (Agricultural Engineering)*, 1939, 1957
B.S., M.S., Auburn University; Ph.D., Michigan State University.
- COPE, JOHN THOMAS, JR. *Professor (Agronomy & Soils)*, 1950, 1959
B.S., M.S., Auburn University; Ph.D., Cornell University.
- CORLESS, WILLIAM W. *Assistant Professor (Aerospace Studies)*, 1968
B.S., Auburn University; Captain, U.S. Air Force.
- CORLEY, T. E. *Assistant Director (Agricultural Experiment Station for Outlying Units)*, 1946, 1966
B.S., M.S., Auburn University.
- CORNETT, LINDA BOWDOIN *Instructor (Philosophy)*, 1969
B.A., University of Chicago; M.A., Emory University.
- CROSS, ARTHUR FULTON *Professor and Head (Elementary Education)*, 1962
B.E., Northern Illinois University; M.A., Northwestern University; Ed.D., Indiana University.
- COTTIER, G. J. *Professor (Poultry Science)*, 1930, 1949
B.S., D.V.M., Auburn University; M.A., University of Missouri.

- COUCH, ROBERT HILL. *Assistant Professor (Vocational & Adult Education)*, 1967
A.B., M.A., University of Montevallo.
- COX, CLARDEL C. *Instructor (Mechanical Engineering)*, 1969
B.S., M.S., Auburn University.
- COX, SHIRLEY O. *Director of Language Laboratory and Instructor (Foreign Languages)*, 1969
A.A., Hillyer Jr. College; B.A., Long Island University; M.Ed., University of Florida.
- CRANE, JOHN D. *Instructor (Civil Engineering)*, 1969
B.C.E., M.S., Auburn University.
- CRAVER, SAMUEL MOCK *Instructor (Foundations of Education)*, 1969
B.A., M.A., University of North Carolina.
- CRAWFORD, ALICE ANN *Instructor (Family & Child Development)*, 1968
B.S., Georgia Southern College; M.Ed., University of Georgia.
- CREVAR, GEORGE EDWARD *Instructor (Pharmacy)*, 1966
B.S., Fordham University; M.S., University of North Carolina.
- CRISS, ROBERT RANDOLPH *Assistant Professor (Accounting & Finance)*, 1966
B.B.S., M.B.A., LL.B., J.D., University of Mississippi; C.P.A.
- CRONENBERG, ALLEN T. *Assistant Professor (History)*, 1968 1969
A.B., M.A., University of North Carolina; Ph.D., Stanford University.
- CROUCH, PAUL WILLIAM, JR. *Assistant to the Dean for Pre-Engineering (Engineering Administration)*, 1969
B.A., Presbyterian College; B.D., Columbia Theological Seminary; M.Ed., Auburn University.
- CULBERSON, ROBERT N. *Instructor (Aerospace Engineering)*, 1968
B.A.E., M.S.A.E., Auburn University.
- CUNNINGHAM, HUGH B. *Associate Professor (Zoology & Entomology)*, 1951, 1965
B.S., M.S., Auburn University; Ph.D., University of Illinois.
- CURL, ELROY A. *Professor (Botany & Plant Pathology)*, 1954, 1967
B.S., Louisiana Polytechnic Institute; M.S., University of Arkansas; Ph.D., University of Illinois.
- CURRENT-GARCIA, ALVA *Assistant Professor (Family & Child Development)*, 1947, 1965
A.B., Randolph-Macon Women's College; M.S., University of Nebraska.
- CURRENT-GARCIA, EUGENE *Hargis Professor (English)*, 1947, 1964
A.B., M.A., Tulane University; A.M., Ph.D., Harvard University.
- CUTCHINS, MALCOLM A. *Associate Professor (Aerospace Engineering)*, 1966, 1968
B.S.C.E., M.S.E.M., Ph.D., Virginia Polytechnic Institute.
- DANIEL, CLAIRANNE H. *Instructor (Speech)*, 1966
B.A., College of St. Francis; M.A., Bowling Green State University.
- DANNER, MAURICE J. *Professor (Agricultural Economics & Rural Sociology)*, 1943, 1957
B.S., Texas Technological College; M.S., University of Tennessee.
- DARDEN, PAUL A. *Associate Professor (Building Technology)*, 1958, 1967
B.Arch., Auburn University.
- DARLING, CHARLES M. *Alumni Associate Professor (Pharmacy)*, 1969
B.S., Ph.D., University of Mississippi.
- DARON, HARLOW H. *Assistant Professor (Animal Science)*, 1967
B.S., University of Oklahoma; Ph.D., University of Illinois.
- DAVALOS, RUDY A., JR. *Assistant Basketball Coach*, 1964, 1968
B.S., Southwest State College; M.A., Georgetown College.
- DAVIS, DONALD E. *Alumni Professor (Botany & Plant Pathology)*, 1947, 1968
B.Ed., Ph.D., Eastern Illinois University; M.S., Ph.D., Ohio State University.
- DAVIS ELIZABETH Y. *Coordinator of Research, School of Home Economics, Professor (Nutrition & Foods)*, 1957, 1969
B.S., Colorado State University; M.S., Ph.D., Auburn University.
- DAVIS, FRANK B. *Professor and Head (Speech)*, 1948, 1956
A.B., Hendrix College; M.A., University of Iowa; Ph.D., Louisiana State University.
- DAVIS, LEONARD REID *Research Lecturer (Pathology & Parasitology)*, 1967, 1968
B.S., Union University; M.S., Ph.D., Iowa State College.
- DAVIS, NICHOLAS D. *Associate Professor (Architecture)*, 1963, 1967
B.A., B.S. Arch., Rice University; M.F.A., Arch., Princeton University.
- DAVIS, NORMAN D. *Professor (Botany & Plant Pathology)*, 1958, 1967
B.S., University of Georgia; M.S., Ph.D., Ohio State University.
- DAVIS, PAUL *Assistant Head Football Coach*, 1967
B.S., University of Mississippi; M.A., University of Southern Mississippi.

- DAVIS, TERRY C., JR. *Assistant Professor (Botany & Plant Pathology)*, 1965
B.S., M.S., Virginia Polytechnic Institute; Ph.D., West Virginia University.
- DAVIS, W. L. *Professor (Secondary Education), Coordinator of International Paper Company Foundation Program*, 1951, 1958
B.S., Middle Tennessee State University; M.A., Peabody College; Ed.D., Columbia University.
- DAVIS, WILLIAM HATCHER *Assistant Professor (Philosophy)*, 1966
B.A., M.A., Abilene Christian College; Ph.D., Rice University.
- DAWSON, MARVIN, JR. *Associate Professor (Learning Resources), Director, Triple T Project*, 1963, 1969
B.S., University of Alabama; M.S., Ed.D., Indiana University.
- DE ARMAN, CAROL *Instructor (Foreign Languages)*, 1969
B.A., M.A., Vanderbilt University.
- DEBRUNNER, L. EARL *Assistant Professor (Forestry)*, 1961
B.S., University of Cincinnati; M.F., Yale University; D.F., Duke University.
- DECKER, HAROLD R. *Assistant Professor (Aerospace Engineering)*, 1965
B.S.Ed., Northeast Missouri State Teachers College; M. Litt., University of Pittsburgh.
- DEFFEBACH, HARRY L., JR. *Research Associate (Electrical Engineering)*, 1967, 1969
B.S.E.E., M.S., Auburn University.
- DELEEUW, WILLIAM L., JR. *Instructor (English)*, 1969
B.A., Berry College; M.A., Auburn University.
- DENDY, EMMA S. *Catalog Librarian and Instructor, Library*, 1960
A.B., Flora MacDonald College; B.S.L.S., University of North Carolina.
- DENDY, JOHN STILES *Professor (Zoology-Entomology)*, 1947, 1957
B.S., Presbyterian College; M.A., University of North Carolina; Ph.D., University of Michigan.
- DENHOLM, DONALD H. *Professor (Industrial Engineering)*, 1968
B.S., Pennsylvania State University; M.S., Washington University.
- DEVALL, WILBUR B. *Professor and Head (Forestry)*, 1946, 1969
B.S., New York State College of Forestry; M.S., University of Florida.
- DIAMOND, DOUGLAS L. *Assistant Professor (Pathology & Parasitology)*, 1960, 1961
D.V.M., Ontario Veterinary College.
- DICKENS, RAY *Assistant Professor (Agronomy & Soils)*, 1968
B.S., University of Arkansas; M.S., Ph.D., Auburn University.
- DICKSON, THOMAS I., JR. *Associate Professor (Political Science)*, 1968
B.A., M.A., Ph.D., University of Texas.
- DIENER, URBAN *Professor (Botany & Plant Pathology)*, 1952, 1963
B.A., Miami University, (Ohio); M.A., Harvard University; Ph.D., North Carolina State University.
- DIGBY, THOMAS, III *Instructor (Philosophy)*, 1968
B.A., William Jewell College; M.A., Northwestern University.
- DINIUS, ROBERT H. *Associate Professor (Chemistry)*, 1961, 1965
B.S., Illinois Wesleyan University; M.S., University of Missouri; Ph.D., Florida State University.
- DINIUS, SARA H. *Instructor (Accounting & Finance)*, 1968
B.S., Northwestern University; M.S., Auburn University; C.P.A.
- DIXON, CARL F. *Assistant Professor (Zoology-Entomology)*, 1964
B.A., University of Colorado; Ph.D., Kansas State University.
- DIXON, CAROLYN J. *Assistant to Archivist, Archives*, 1960, 1969
B.S., Auburn University.
- DOHIE, JAMES L. *Assistant Professor (Zoology-Entomology)*, 1967
B.S., Centenary College; M.S., Ph.D., Tulane University.
- DOERLING, GEORGE G. *Assistant Professor (Small Animal Surgery & Medicine)*, 1967
B.S., B.S., D.V.M., University of Illinois; M.S., Purdue University.
- DOERSTLING, STEFFEN R. *Associate Professor (Architecture)*, 1966
B.A., Institute of Tech., Munich, Germany; M.A., Institute of Tech., Stuttgart, Germany; Dr. of Engineering, Institute of Tech., Stuttgart, Germany.
- DONNAN, HUGH H. *Assistant Professor (Counselor Education)*, 1965
B.A., M.Ed., Furman University; Ph.D., University of North Carolina.
- DONNELLY, EDWARD DANIEL *Professor (Agronomy & Soils)*, 1946, 1959
B.S., M.S., Auburn University; Ph.D., Cornell University.
- DORMAN, COY *Assistant Professor (Economics & Geography)*, 1959, 1963
A.B., East Carolina College; M.S., University of Tennessee.
- DOUTY, HELEN IRENE *Associate Professor (Consumer Affairs)*, 1962
B.S., M.S., Cornell University; Ph.D., Florida State University.

- DRAGOIN, ANTHONY..... *Assistant Professor (Health, Physical Education & Recreation)*, 1951, 1965
B.S., M.S., Auburn University.
- DRAKE, JAMES BOB..... *Instructor (Vocational & Adult Education)*, 1969
B.S., M.Ed., Auburn University.
- DRISCOLL, LELLAND S..... *Instructor (Agricultural Economics & Rural Sociology)*, 1965
B.S., M.S., Auburn University.
- DRUMMOND, ALASTAIR M..... *Associate Professor (Aerospace Engineering)*, 1967
B.A.Sc., M.A.Sc., University of British Columbia; D.C.Ac., College of Aeronautics; Ph.D., University of Toronto.
- DUMAS, WILLIAM T., JR..... *Associate Professor (Agricultural Engineering)*, 1946, 1955
B.S., M.S., Auburn University.
- DUNKELBERGER, JOHN E..... *Associate Professor (Rural Sociology)*, 1962, 1967
A.B., Franklin & Marshall College; M.S., Pennsylvania State University; Ph.D., Mississippi State University.
- DUNLAP, JOHN R..... *Director, Student Financial Aid*, 1962
B.S., Clemson University.
- DUNN, JERRY R..... *Assistant Professor (Mechanical Engineering)*, 1966
B.S.M.E., Lamar State College of Technology; M.S.M.E., Georgia Institute of Technology.
- DURANT, JACK D..... *Associate Professor (English)*, 1963, 1967
A.B., Maryville College; M.A., Ph.D., University of Tennessee.
- DURHAM, JAMES DAVID..... *Assistant Professor (Physics)*, 1969
B.S., Georgia Institute of Technology; M.S., University of Tennessee.
- DUSI, JULIAN L..... *Professor (Zoology-Entomology)*, 1949, 1963
B.S., M.S., Ph.D., Ohio State University.
- DYER, DAVID F..... *Associate Professor (Mechanical Engineering)*, 1965, 1969
B.S.M.E., University of Tennessee; M.S.M.E., Ph.D., Georgia Institute of Technology.
- EADDY, VANIK SILAS..... *Assistant Professor (Vocational & Adult Education)*, 1968
B.S., Clemson University; M.S., Ph.D., Louisiana State University.
- EASLEY, GILES M..... *Instructor (Foundations of Education)*, 1966
B.A., George Washington University.
- EASTERDAY, KENNETH E..... *Associate Professor (Elementary Education)*, 1964, 1967
B.S., M.A.T., Indiana University; Ed.D., Western Reserve University.
- EAVES, RICHARD G..... *Assistant Professor (History)*, 1966
B.S., M.A., Mississippi State University; M.A., Peabody College; Ph.D., University of Alabama.
- EDGAR, S. A..... *Professor (Poultry Science)*, 1947, 1950
A.B., Sterling College; M.S., Kansas State University; Ph.D., University of Wisconsin; Sc.D., Sterling College.
- ELAM, MARY JANE..... *Instructor (Consumer Affairs)*, 1967
B.S., M.S., University of Tennessee.
- ELLISOR, MILDRED R..... *Professor (Elementary Education)*, 1958, 1967
A.B., Huntingdon College; M.A., Ed.D., Columbia University.
- ENGEL, HAROLD N. JR..... *Instructor (Anatomy & Histology)*, 1969
B.S., D.V.M., University of Missouri.
- ENGLISH, DEWEY W..... *Assistant Professor (Elementary Education)*, 1963, 1965
A.B., M.Ed., Mercer University; Ed.D., Auburn University.
- ENSMINGER, ISABEL S..... *Assistant Professor (Secondary Education)*, 1945, 1961
B.S.H.E., West Virginia University; M.S., University of Minnesota.
- ENSMINGER, LEONARD E..... *Professor and Head (Agronomy & Soils)*, 1944, 1966
B.S., University of Missouri; Ph.D., University of Illinois.
- ERICKSON, MAURICE..... *Instructor (Theatre)*, 1968
B.S., Dickinson State College; M.F.A., Ohio University.
- ERNST, JOHN V..... *Research Lecturer (Pathology & Parasitology)*, 1968
B.S., Portland State College; M.S., Ph.D., Utah State University.
- ESTES, PAUL MICHAEL..... *Assistant Professor (Zoology-Entomology)*, 1966
B.S., Purdue University; Ph.D., University of California.
- EVANS, CLYDE E..... *Assistant Professor (Agronomy & Soils)*, 1957
B.S., Abilene Christian College; M.S., Auburn University; Ph.D., North Carolina State University.
- EVANS, EMERSON M..... *Associate Professor (Agronomy & Soils)*, 1949, 1953
B.S., Auburn University; M.S., Cornell University.
- EVERETT, RAYMOND M..... *Instructor (Small Animal Surgery & Medicine)*, 1968
D.V.M., Auburn University.
- EWING, ROBERT C..... *Assistant Professor (Naval Science)*, 1968
B.S.A., University of Florida; Lieutenant, U.S. Navy.

- FABEL, ROBIN F. A. _____ *Instructor (History)*, 1969
B.A., M.A., Oxford University.
- FARLEY, W. SCOTT _____ *Director, University Placement Service*, 1964
B.S., Auburn University.
- FARRAR, PERRY LEE _____ *Instructor (Vocational & Adult Education)*, 1967
B.S., Troy State University; M.Ed., Auburn University.
- FARROW, JAMES C. _____ *Associate Professor (Textile Engineering)*, 1949, 1965
B.S.T.E., Auburn University.
- FAULK, RUTH T. _____ *Assistant Professor (English)*, 1947, 1955
A.B., Huntingdon College; M.S., Auburn University.
- FAUST, ROBERT L. _____ *Assistant Professor (Architecture)*, 1968
B.A. of Arch., University of Oklahoma.
- FEASTER, WILLIAM M. _____ *Associate Professor (Electrical Engineering)*, 1956, 1965
B.S.E.E., M.S.E.E., Auburn University.
- FIEDLER, MIROSLAV _____ *Visiting Professor (Mathematics)*, 1969
M.Sc., Charles University, Praha, Czechoslovakia; Ph.D., Academy of Science, Praha, Czechoslovakia.
- FISHER, HOMER S., JR. _____ *Associate Registrar*, 1963, 1967
B.S., M.B.A., Auburn University.
- FITZPATRICK, BEN, JR. _____ *Professor (Mathematics)*, 1959, 1966
B.S., Auburn University; M.A., Ph.D., University of Texas.
- FITZPATRICK, MARY PRESTON _____ *Associate Professor (Health, Physical Education & Recreation)*, 1962
B.S., Middle Tennessee State University; M.A., Ed.D., Peabody College.
- FITZPATRICK, PHILIP M. _____ *Professor (Mathematics)*, 1962, 1968
B.S., M.S., Ph.D., University of Oklahoma.
- FITZPATRICK, PHILIP M., JR. _____ *Instructor (Art)*, 1968
B.F.A., Auburn University.
- FLUKER, BILLIE J. _____ *Associate Professor (Mechanical Engineering)*, 1960
B.S.E.E., M.S.M.E., Texas A & M University; Ph.D., Tulane University.
- FOLKERTS, GEORGE W. _____ *Assistant Professor (Zoology-Entomology)*, 1966, 1969
B.A., M.A., Southern Illinois University; Ph.D., Auburn University.
- FORD, H. THOMAS, JR. _____ *Instructor (Health, Physical Education & Recreation)*, 1969
B.S., M.S., Jacksonville State University.
- FORD, JO L. _____ *Associate Professor (Mathematics)*, 1965, 1969
B.S., University of Southwest Louisiana; M.S., Ph.D., Auburn University.
- FORD, RALPH M. _____ *Associate Professor (Mathematics)*, 1965, 1967
B.E.P., M.S., Ph.D., Auburn University.
- FORSYTHE, BENJAMIN C. _____ *Instructor (Physics)*, 1966
B.A., Toronto University.
- FORTENBERRY, CHARLES N. _____ *Professor and Head (Political Science)*, 1968
B.A., M.A., University of Mississippi; Ph.D., University of Illinois.
- FOSHEE, DONALD P. _____ *Professor (Psychology)*, 1965, 1969
B.A., Birmingham-Southern College; M.A., Ph.D., Vanderbilt University.
- FOSTER, WINFRED A. _____ *Instructor (Aerospace Engineering)*, 1969
B.A.E., M.S., Auburn University.
- FOURIER, ARTHUR E. _____ *Professor and Head (Health, Physical Education & Recreation)*, 1961
B.S., University of Illinois; M.A., Ph.D., Peabody College.
- FOURIER, RUTH G. _____ *Humanities Librarian and Assistant Professor, Library*, 1962, 1969
A.D., Vanderbilt University; M.A., University of South Carolina; Ph.D., Vanderbilt University.
- FRANCIS, ROBERT J. _____ *Professor (Health, Physical Education & Recreation)*, 1963, 1964
A.B., Ohio Northern University; M.A., Western Kentucky State University; Ph.D., Ohio State University.
- FRANCIS, WILLIAM HUGH _____ *Professor and Head (Engineering Graphics)*, 1931, 1959
B.S., M.S., Auburn University.
- FRANDSEN, JOHN C. _____ *Research Lecturer (Pathology & Parasitology)*, 1967
B.S., M.S., Ph.D., University of Utah.
- FRANK, HARRY E., JR. _____ *Assistant Professor (Vocational & Adult Education)*, 1968
B.S., M.S., Oklahoma State University; Ed.D., Florida State University.
- FREEMAN, JOHN D. _____ *Assistant Professor (Botany & Plant Pathology)*, 1968
B.A., Austin Peay State College; Ph.D., Vanderbilt University.

- FREEMAN, ROBERT C. _____ Assistant Football Coach, 1964
B.S., Auburn University.
- FRENCH, FRANCES C. _____ Assistant Professor (Sociology), 1960, 1969
B.A., M.S., Louisiana State University.
- FRENCH, JOHN D. _____ Associate Professor (Physics), 1958, 1963
B.S., M.S., Ph.D., Louisiana State University.
- FRETWELL, PHILIP _____ Instructor (Building Technology), 1967
B. of Arch., Auburn University.
- FRIEDMAN, HARRIETT _____ Instructor (Foreign Languages), 1967
B.A., Hunter College; M.A., Yale University.
- FRIEDMAN, MICHAEL E. _____ Assistant Professor (Chemistry), 1968
B.S., University of Pennsylvania; M.S., Brooklyn Polytechnic Institute; Ph.D., Cornell University.
- FROMHOLD, A. T., JR. _____ Associate Research Professor (Physics), 1965
B.S., M.S., Auburn University; Ph.D., Cornell University.
- GAAR, ALICE CAROL _____ Instructor (Foreign Languages), 1967
B.A., Louisiana State University; M.A., Columbia University.
- GATES, JAMES B., JR. _____ Instructor (Large Animal Surgery & Medicine), 1969
D.V.M., University of Georgia.
- GEIGER, GRADY EUGENE _____ Head, Circulation Division and Assistant
Professor, Library, 1960, 1963
B.S., Auburn University; A.M.L.S., University of Michigan.
- GIBBONS, WALTER J. _____ Professor (Large Animal Surgery &
Medicine), 1947, 1955
D.V.M., M.S., Cornell University.
- GIBBS, NANCY _____ Catalog Librarian and Instructor, Library, 1968
B.S., Madison College; M.S.L.S., University of Denver.
- GIBBS, ROBERT C. _____ Assistant to the Director of Libraries and Associate
Professor, Library, 1968
A.B., Duke University; M.S.L.S., University of North Carolina.
- GIBSON, ROBERT W. _____ Associate Professor (Civil Engineering), 1969
A.B., Fort Hays Kansas State College; A.M., Ph.D., University of Illinois.
- GILL, WILLIAM ROBERT _____ Research Lecturer (Agricultural Engineering), 1957
B.S., Pennsylvania State University; M.S., University of Hawaii; Ph.D., Cornell University.
- GILLILAND, FLOYD R., JR. _____ Assistant Professor (Zoology-Entomology), 1967
B.S., Arkansas Polytechnic College; M.S., University of Arkansas; Ph.D., Mississippi State University.
- GLYDE, EDGAR C. _____ Professor (Music), 1946, 1957
F.T.C.L., L.Mus.T.C.L., L.R.A.M., L.T.C.L. (London, England).
- GOLDEN, JOE PERRY _____ Instructor (Electrical Engineering), 1968
B.S., M.S., Mississippi State University.
- GOODLING, JOHN S. _____ Assistant Professor (Mechanical Engineering), 1968
B.S.M.E., M.S.M.E., Ph.D., University of Florida.
- GOODMAN, JOHN G. _____ Associate Professor (Poultry Science), 1939, 1946
B.S., M.S., Auburn University.
- GOODWIN, GEORGE R. _____ Assistant Professor (Management), 1967
B.S., University of Florida; M.S., George Washington University.
- GOOLSBY, HYRON C. _____ Assistant Professor (Industrial Laboratories), 1953, 1958
B.S., M.Ed., Auburn University.
- GOSLIN, WILLIAM E. _____ Assistant Professor (Botany & Plant Pathology), 1959
B.S., M.S., Ph.D., Ohio State University.
- GRAF, EDWARD RAYMOND _____ Professor (Electrical Engineering), 1957, 1967
B.E.E., M.E.E., Auburn University; Ph.D., University of Stuttgart, Germany.
- GRANT, WILLIAM HAROLD _____ Director, Student Development Services and
Professor, (Counselor Education), 1969
B.S., M.S., Auburn University; Ed.D., Columbia University.
- GRAVES, RICHARD L. _____ Assistant Professor (Secondary Education), 1965
B.A., Baylor University; M.Ed., University of Florida; Ph.D., Florida State University.
- GRAY, JOHN W. _____ Assistant Professor (Speech), 1959, 1963
B.A., Ouachita University; M.A., University of Arkansas.
- GRAY, SAM A. _____ Assistant Professor (Military Science), 1968
B.F.A., Oklahoma University; Captain, U.S. Army.
- GREENE, GEORGE N. _____ Assistant Professor (Zoology & Entomology), 1964
B.A., Rice University; M.S., University of Michigan; Ph.D., Auburn University.

- GREENE, JOSEPH LEE Associate Professor (Chemistry), 1968
B.S., M.S., Auburn University; Ph.D., Emory University.
- GREENSHIELDS, CHARLES M. Associate Professor (Foundations of Education), 1969
B.A., M.A., Ph.D., Michigan State University.
- GRITZ, IRVIN B. Associate Professor (Accounting & Finance), 1931, 1946
B.S., M.S., Oklahoma State University.
- GROTH, AARON H., JR. Professor and Head (Pathology & Parasitology), 1957, 1964
B.S., D.V.M., Auburn University; M.S., Iowa State University.
- GUDAUSKAS, ROBERT T. Professor (Botany & Plant Pathology), 1960, 1969
B.S., Eastern Illinois University; M.S., Ph.D., University of Illinois.
- GUENTHER, JUDITH M. Instructor (Anatomy & Histology), 1966, 1968
A.A., Stephens College of Missouri; B.A., University of Illinois; M.S., Medical College of Georgia.
- GUENTHER, RAYMOND R. Assistant Professor (Mathematics), 1966
B.S., M.S., Ph.D., Iowa State University.
- HAGLER, HAROLD O. Systems Analyst, Computer Center, Instructor
(Industrial Engineering), 1969
B.S., University of Alabama.
- HAINES, PAUL Professor (English), 1947, 1952
B.S., Lafayette College; M.A., Ohio Wesleyan University; Ph.D., New York University.
- HAIRE, WILLIAM H., JR. Assistant Professor (Architecture), 1969
B.Arch., Ohio State University.
- HAJEK, BENJAMIN F. Assistant Professor (Agronomy & Soils), 1968
B.S., Texas A&M University; M.S., Ph.D., Auburn University.
- HALCOMB, ALVIN H., JR. Specialist (Vocational Agriculture), 1966
B.S., M.S., Auburn University.
- HALE, DENNIS P. Associate Professor (Accounting & Finance), 1957, 1965
B.S., Middle Tennessee State University; M.A., Peabody College.
- HALE, FRANCIS W. Assistant Professor (Management), 1956, 1959
B.S., Troy State University; M.A., Peabody College.
- HALL, DAVID Associate Professor (Textile Engineering), 1965
B.T.C., Auburn University; M.S.T.C., Clemson University; Ph.D., Victoria University of Manchester, England.
- HALL, HINES H., III Instructor (History), 1967
B.A., Duke University; M.A., Auburn University.
- HAMID, HASSAN A. Assistant Professor (Nutrition & Foods), 1968
B.S., Fresno State College; M.S., Montana State College; Ph.D., University of Georgia.
- HAMILTON, JOHN WARD Associate Professor (Foreign Languages), 1956, 1961
A.A., B.A., M.A., University of Florida; Doctor en fil. y let., University de Salamanca.
- HANKES, GERALD H. Assistant Professor (Small Animal Surgery
& Medicine), 1969
B.S., D.V.M., University of Illinois; M.S., Ph.D., Colorado State University.
- HANSEN DEWAYNE T. Assistant Professor (Aerospace Studies), 1965
B.S., Brigham Young University; Major, U.S. Air Force.
- HARGREAVES, GEORGE W. Professor (Pharmacy), 1926, 1950
B.S., M.S., Ph.C., University of Nebraska.
- HARLAN, RICHARD S. Assistant Professor (Physics), 1959
B.S., U.S. Naval Academy.
- HARMON, GRADY R. Assistant Professor (Mechanical Engineering), 1963, 1965
B.E.P., M.S., Auburn University.
- HARPER, JAMES D. Assistant Professor (Zoology-Entomology), 1969
B.S., M.S., University of Illinois; Ph.D., Oregon State University.
- HARPER, JANIS CLEMENTS Assistant Professor (Art), 1965, 1969
B.S., University of Alabama; M.A., Auburn University.
- HARRIS, CATHERINE T. Instructor (Sociology), 1969
A.B., Lenoir Rhyne College; M.A., Duke University.
- HARRIS, HUBERT Associate Professor (Horticulture), 1936, 1963
B.S., M.S., Auburn University.
- HARRIS, JAMES ROBERT Instructor (Marketing & Transportation), 1968
B.B.S., Emory University; M.B.A., University of Florida.
- HARRIS, RALPH R. Associate Professor (Animal Science), 1960, 1963
B.S., M.S., Auburn University; Ph.D., Texas A&M University.
- HARRISON, JOSEPH H., JR. Professor (History), 1950, 1968
B.A., M.A., Ph.D., University of Virginia.

- HARTFORD, DONALD LEROY..... *Computer Scientist, Computer Center, Associate Professor (Industrial Engineering)*, 1966
B.A., M.A., Ed.D., University of Kentucky.
- HARTMAN, MAURICE A..... *Professor (Accounting & Finance)*, 1958, 1963
B.S., High Point College; M.S., University of North Carolina; M.B.A., University of Texas; C.P.A., (North Carolina); C.L.U., American College of Life Underwriters; C.P.C.U., American Institute for Property and Liability Underwriters, Inc.
- HARTWIG, CHESTER W..... *Professor and Acting Head (Sociology)*, 1951, 1967
B.S., M.A., Ph.D., University of Wisconsin.
- HARTWIG, MARGARET P..... *Instructor (Mathematics)*, 1960, 1963
B.A., University of Wisconsin; M.S., Auburn University.
- HARWELL, KENNETH EDWIN..... *Alumni Associate Professor (Aerospace Engineering)*, 1963, 1969
B.S., University of Alabama; M.S., Ph.D., California Institute of Technology.
- HATCHER, NOLAN C..... *Assistant Professor (Foundations of Education)*, 1969
B.A., Abilene Christian College; M.Ed., University of Oklahoma.
- HATFIELD, DONALD G..... *Assistant Professor (Art)*, 1964
A.A., Northwestern Michigan College; B.A., M.A., Michigan State University; M.F.A., University of Wisconsin.
- HAWKINS, GEORGE E..... *Professor (Dairy Science)*, 1952, 1959
B.S., Western Kentucky State University; M.S.A., University of Georgia; Ph.D., North Carolina State University.
- HAWKINS, HERBERT N..... *Director, Admissions*, 1966
B.S., M.S., Auburn University.
- HAYHURST, DONALD E..... *Professor (Political Science)*, 1968
A.B., M.Litt., Ph.D., University of Pittsburgh.
- HAYNES, LUTHER J..... *Professor and Head (Industrial Laboratories)*, 1945, 1962
B.S., M.S., Auburn University; Ed.D., Bradley University.
- HAYNSWORTH, EMILIE V..... *Research Professor (Mathematics)*, 1960, 1965
A.B., Coker College; M.A., Columbia University; Ph.D., University of North Carolina.
- HAYS, KIRBY L..... *Professor (Zoology & Entomology)*, 1957, 1964
B.S., M.S., Auburn University; Ph.D., University of Michigan.
- HEADLEY, HEIDEMARIE LISELOTTE..... *Instructor (Foreign Languages)*, 1967
B.A., University of South Florida; M.A., University of Missouri.
- HELMKE, HENRY C..... *Assistant Professor (Foreign Languages)*, 1959, 1963
B.A., M.A., Duke University.
- HENDERSON, MALCOLM R..... *Professor (Accounting & Finance)*, 1966
B.B.A., University of Georgia; M.S., University of Tennessee; Ph.D., University of Alabama.
- HENLEY, W. D..... *Associate Professor (Marketing & Transportation)*, 1967
B.S., Auburn University; M.A., Ph.D., University of Alabama.
- HENRY, JOHN FREDERICK..... *Associate Professor and Head (Management)*, 1957, 1964
B.I.M., Auburn University; M.S.I.M., Georgia Institute of Technology; Ph.D., University of Alabama.
- HENSON, CURTIS T., JR..... *Assistant Professor (History)*, 1966
B.S., M.A., Auburn University; Ph.D., Tulane University.
- HERMANSON, RONALD F..... *Assistant Professor (Agricultural Engineering)*, 1966
B.S., M.S., Ph.D., Iowa State University.
- HERNDON, FRANK M..... *Professor (Education)*, 1962
A.B., Bowling Green College of Commerce; M.B.A., University of Mississippi; Ed.D., Northwestern University.
- HERRING, BRUCE E..... *Assistant Professor (Industrial Engineering)*, 1965
B.I.E., Ohio State University; M.S.M.E., New Mexico State University.
- HICKMAN, CHARLES E..... *Associate Professor (Electrical Engineering)*, 1966
B.S.E.E., M.S.E.E., Ph.D., University of Tennessee.
- HICKS, NORMAN W..... *Associate Professor (Naval Science)*, 1967
B.S., M.A., University of Maryland; Lt. Colonel, U.S.M.C.
- HIERS, CHARLES J..... *Associate Professor (Art)*, 1965, 1969
B.A.A., M.A.A., Auburn University.
- HIGGINBOTHAM, THOMAS F..... *Instructor (Industrial Engineering)*, 1969
B.S., University of Georgia; M.Ed., Auburn University.
- HILL, A J..... *Professor (Accounting & Finance)*, 1948, 1952
B.S., Auburn University; M.B.A., Northwestern University.
- HILL, RAYMOND..... *Instructor (Vocational & Adult Education)*, 1967
B.S., Troy State University; M.A., University of Alabama.
- HILTBOLD, ARTHUR EDWARD..... *Professor (Agronomy & Soils)*, 1955, 1968
B.S., Cornell University; M.S., Iowa State University; Ph.D., Cornell University.

- HILYER, JAMES C. _____ *Assistant Football Coach*, 1968
B.S., Stetson University; M.S., Ed.D., Mississippi State University.
- HINRICHSSEN, JOHN W. _____ *Assistant Professor (Mathematics)*, 1967
B.A., M.A., Ph.D., University of Texas.
- HINTON, MARJORIE J. _____ *Assistant Professor (Family & Child Development)*, 1963
B.S., University of Alabama; M.S., Auburn University.
- HINTON, WILBUR _____ *Professor and Head (Music)*, 1956, 1969
B.M., M.A., Ed.D., University of Alabama.
- HIRTH, LEO J. _____ *Associate Professor (Chemical Engineering)*, 1962
B.S., College of City of New York; M.S., Ph.D., University of Texas.
- HOBBS, MARLEAH KAUFMAN _____ *Assistant Professor (Art)*, 1967
B.F.A., University of Colorado; M.F.A., University of Mississippi.
- HOCKING, GEORGE M. _____ *Professor (Pharmacy)*, 1951
B.S.P., University of Washington; M.S.P.; Ph.D., University of Florida.
- HODGINS, EARL J. _____ *Professor (Forestry)*, 1952, 1957
B.S., Michigan State University; M.S., University of California; Ph.D., Michigan State University.
- HODSON, NORMA S. GAUKER _____ *Research Professor (Family & Child Development)*, 1964
B.S., Butler University; M.S., Ph.D., Florida State University.
- HOERLE, JAMES R. _____ *Assistant Professor (Aerospace Studies)*, 1966
B.S., United States Naval Academy; Captain, U.S. Air Force.
- HOERLEIN, BENJAMIN F. _____ *Alumni Professor and Head (Small Animal Surgery & Medicine)*, 1947, 1958
D.V.M., Colorado State University; Ph.D., Cornell University.
- HOFF, EDWIN J. _____ *Associate Professor (Pathology & Parasitology)*, 1962
D.V.M., Cornell University; M.S., University of Pennsylvania.
- HOLLAWAY, OTTO _____ *Professor (Education)*, 1945, 1953
B.S., M.S., Auburn University; Ed.D., Teachers College, Columbia University.
- HOLLEY, PAUL B. _____ *Vocational Education Supervisor (Vocational Agriculture)*, 1966, 1967
B.S., M.S., Auburn University.
- HOLLEY, WILLIAM HENRY, JR. _____ *Instructor (Management)*, 1969
B.S., M.B.A., Mississippi State University.
- HOLLOWAY, CLARKE L. _____ *Professor and Head (Anatomy & Histology)*, 1968
D.V.M., M.S., Auburn University; Ph.D., Iowa State University.
- HOLMES, CHARLES H. _____ *Assistant Dean (Engineering Administration)*, 1957, 1969
B.E.E., Auburn University; M.E.E., Polytechnic Institute of Brooklyn; Ph.D., Stanford University.
- HOLSENBECK, DAN C. _____ *Assistant Director (Cooperative Education)*, 1969
B.S., Auburn University; M.Ed., Johns Hopkins University.
- HONNELL, MARTIAL ALFRED _____ *Professor (Electrical Engineering)*, 1958
B.S.E.E., M.S.E.E., E.E., Georgia Institute of Technology.
- HONOUR, FRANCES M. _____ *Readers' Adviser and Instructor, Library*, 1955, 1969
B.A., Tennessee Technological University; M.A., Auburn University; M.S., University of Southern California.
- HOOD, JOSEPH T. _____ *Professor (Agronomy & Soils)*, 1949, 1959
B.S., University of Georgia; M.S., Purdue University; Ph.D., Cornell University.
- HOOL, JAMES N. _____ *Associate Professor (Industrial Engineering)*, 1965, 1967
B.S., M.S., Ph.D., Purdue University.
- HORN, FERRELL S. _____ *Assistant Professor (Family & Child Development)*, 1969
B.S., M.Ed., Auburn University.
- HORN, GEORGE M. _____ *Assistant Professor (Management)*, 1968
B.B.A., University of Georgia; M.B.A., Rollins College.
- HORNE, ROBERT D. _____ *Alumni Associate Professor (Small Animal Surgery & Medicine)*, 1959, 1963
D.V.M., M.S., Auburn University.
- HORTON, GEORGE R., JR. _____ *Professor and Head (Marketing & Transportation)*, 1968, 1969
B.S., M.S., Auburn University; Ph.D., University of Virginia.
- HORTON, JOSEPH L. _____ *Instructor (Physics)*, 1966
B.A., Indiana State University; M.S.T., Illinois Wesleyan University.
- HOUSEHOLDER, JERRY L. _____ *Assistant Professor (Building Technology)*, 1969
B.S.C.E., University of Tennessee; M.S., Georgia Institute of Technology.
- HOVELAND, CARL S. _____ *Professor (Agronomy & Soils)*, 1959, 1968
B.S., M.S., University of Wisconsin; Ph.D., University of Florida.

- HOWARD, HERBERT ALLEN *Assistant Professor (Economics & Geography)*, 1969
B.A., M.A., Ball State University; Ph.D., Indiana University.
- HOWARD, MARY JOE *Assistant Professor (Music)*, 1969
A.A., Campbell College; B.M., Westminster Choir College; M.M., Florida State University.
- HSU, CHENG-TEH *Professor (Chemical Engineering)*, 1953, 1962
B.S.C., University of Nanking; M.S., University of Wisconsin; Ph.D., University of Pennsylvania.
- HUDSON, FRED M. *Professor (Civil Engineering)*, 1947, 1961
B.S.C.E., Purdue University; M.S., Princeton University.
- HUDSON, ROBERT S. *Instructor (Large Animal Surgery & Medicine)*, 1967
D.V.M., Oklahoma State University.
- HUDSON, SARA CARRUTH *Associate Professor (English)*, 1952, 1968
A.B., University of North Carolina; M.A., Ph.D., University of Chicago.
- *HUFFMAN, DALE L. *Associate Professor (Animal Science)*, 1963, 1965
B.S., Cornell University; M.S., Ph.D., University of Florida.
- HUG, KATHRYN H. *Instructor (English)*, 1969
B.A., Oklahoma City University; M.A., California State College.
- HUG, WILLIAM E. *Assistant Professor and Coordinator*
(Learning Resources), 1969
B.S., University of Oregon; M.A., Colorado State College; Ed.D., University of Southern California.
- HUGHES, GLENN HOOD *Assistant Professor (Psychology)*, 1968
B.S., Randolph-Macon College; Ph.D., Tulane University.
- HUGHES, GORDON *Professor (Physics)*, 1933, 1946
B.A., Oberlin College; M.A., Ph.D., University of Illinois.
- HYCHE, LACY LEONARD *Associate Professor (Zoology-Entomology)*, 1952, 1960
B.S., M.S., Auburn University.
- ICENOGLU, DAVID W. *Assistant Professor (Economics & Geography)*, 1968
B.S., Western Illinois University; M.A., University of Illinois.
- IKENBERRY, ERNEST *Professor (Mathematics)*, 1950, 1956
B.A., Ottawa University; M.S., University of Kansas; Ph.D., Louisiana State University.
- INGRAM, FORNEY H. *Associate Professor (Engineering Graphics)*, 1927, 1963
B.S.C.E., M.C.E., Auburn University.
- IRVINE, LAVERNE F. *Associate Professor (Psychology)*, 1965
B.M., B.A., Louisiana Polytechnic Institute; M.A., Ph.D., Stanford University.
- IRWIN, DAVID *Assistant Professor (Electrical Engineering)*, 1969
B.E.E., Auburn University; M.S.E.E., Ph.D., University of Tennessee.
- IVEY, WILLIAM D. *Associate Professor (Zoology-Entomology)*, 1947, 1961
B.S., M.S., Auburn University; Ph.D., Emory University.
- JACKSON, JESSE MARK, JR. *Instructor (Economics & Geography)*, 1968
B.S., Auburn University; M.A., University of South Carolina.
- JACOB, ALICE K. *Catalog Librarian and Instructor, Library*, 1968
B.A., Auburn University; M.S.L.S., Columbia University.
- JACOBS, KAREN L. *Instructor (English)*, 1968
B.A., Augustana College; M.A., Auburn University.
- JAMES, CHARLES D. *Instructor (Speech)*, 1969
B.S., M.A., Florence State University; M.A., Auburn University.
- JAMES, CHARLES W. *Assistant Professor (Anatomy & Histology)*, 1957, 1960
D.V.M., M.S., Auburn University.
- JAMES, SIDNEY N. *Assistant Professor (Electrical Engineering)*, 1966
B.S.E.E., M.S.E.E., Ph.D., University of Alabama.
- JARVIS, PETER EDWARD *Assistant Professor (Architecture)*, 1968
B.S.C.E., University of Notre Dame; M.C.P., Yale University.
- JEMIAN, WARTAN A. *Professor (Mechanical Engineering)*, 1962, 1965
B.S.Ch., University of Maryland; M.S., Ph.D., Metallurgical Engineering, Rensselaer Polytechnic Institute.
- JENKINS, E. GARTH *Assistant Dean of Student Affairs for Fraternities*, 1964, 1969
B.A., Wake Forest University; M.Ed., Auburn University.
- JENKINS, WILLIAM OLIVER *Professor (Psychology)*, 1968
B.A., Colgate University; Sc.M., Brown University; Ph.D., Yale University.
- JENNINGS, WILLIAM E. *Professor (Microbiology)*, 1967
D.V.M., Cornell University; D.V.M. (Hon.), Berlin, Germany.
- JENSEN, OVE WILLIAM *Assistant Professor (Elementary Education)*, 1966
B.M., M.M., Ed.D., University of Miami.

- JHIN, KYO R. *Instructor (Secondary Education)*, 1969
B.A., David Lipscomb College; M.A., New York University; M.A., Boston College.
- JIMINEZ, LETICIA *Instructor (Foreign Languages)*, 1968
B.S., M.A., Louisiana State University.
- JOHNSON, EVERT W. *Professor (Forestry)*, 1950, 1967
B.S., University of New Hampshire; M.F., Yale University; Ph.D., Syracuse University.
- JOHNSON, FREDERIC ALLAN *Associate Professor (Chemistry)*, 1970
B.S., M.S., University of New Hampshire; Ph.D., University of Wisconsin.
- JOHNSON, JOHN C. *Research Associate (Electrical Engineering)*, 1967, 1969
B.S.E.E., M.S.E.E., Auburn University.
- JOHNSON, SIDNEY W. *Associate Professor (Political Science)*, 1925, 1941
B.S., M.S., Auburn University.
- JOHNSON, WILEY C., JR. *Professor (Agronomy & Soils)*, 1957, 1969
B.S., Wake Forest University; B.S., M.S., North Carolina State University; Ph.D., Cornell University.
- JONES, ALLEN WOODROW *Archivist and Associate Professor (History)*, 1966, 1969
B.S., M.A., Auburn University; Ph.D., University of Alabama.
- JONES, EDWARD O., JR. *Professor (Mechanical Engineering)*, 1946, 1965
B.M.E., B.E.E., Auburn University; M.S., University of Illinois.
- JONES, JOHN T. *Assistant Football Coach*, 1966
B.S., Troy State University; M.S., Auburn University.
- JONES, KENT LEWIS *Assistant Professor (Zoology-Entomology)*, 1969
B.S., Ohio State University; M.S., Ph.D., Oklahoma State University.
- JONES, MADISON P., JR. *Professor (English) and Alumni
Writer-in-Residence*, 1956, 1968
A.B., Vanderbilt University; M.A., University of Florida.
- JONSON, WILLIAM C., JR. *Assistant Director of Engineering Experiment
Station*, 1956, 1967
B.S., U.S. Naval Academy.
- JORDAN, JAMES L. *Associate Professor (Educational Administration)*, 1967
B.S., M.Ed., University of Georgia; Ed.D., University of Tennessee.
- JORDAN, J. RALPH *Head Football Coach and Assistant Director of Athletics*, 1932, 1951
B.S., Auburn University.
- JUDKINS, JOSEPH F., JR. *Assistant Professor (Civil Engineering)*, 1967
B.S., M.S., Ph.D., Virginia Polytechnic Institute.
- JUSTICE, ERNEST *Associate Professor (Secondary Education)*, 1960, 1963
B.M.E., Kansas State Teachers College; M.S., Ph.D., University of Wisconsin.
- JUSTICE, MARY E. *Assistant Professor (Elementary Education)*, 1960, 1969
B.M.E., Kansas State Teachers College; M.Ed., Auburn University.
- KAIP, JOHN *Assistant Professor (Architecture)*, 1966
B.of Arch., M.of Arch., University of Illinois.
- KAISER, GEORGE F. *Assistant Professor (Military Science)*, 1967
B.S., United States Military Academy; Major, U.S. Army.
- KELLEY, VIRGINIA C. *Instructor (Microbiology)*, 1969
A.B., LaGrange College; M.S., Auburn University.
- KENDRICK, JOHN P. *Assistant Professor (Music)*, 1968
B.S., M.A., University of Alabama.
- KENNEDY, NANCY C. *Instructor (Foreign Language)*, 1965, 1967
A.B., University of North Carolina; M.A., University of Wisconsin.
- KENT, ROBERT A. *Instructor (Economics & Geography)*, 1968
B.S., M.B.A., Auburn University.
- KERN, EDWARD E., JR. *Professor (Economics & Geography)*, 1955, 1966
B.S., M.S., Louisiana State University; Ph.D., University of Kentucky.
- KETTUNEN, MARIETTA *Associate Professor (Art)*, 1954, 1957
B.A.E., Art Institute of Chicago; Studied Parsons, New York Art Students League, New York School of Fine and Applied Arts.
- KHLEIF, S. B. *Instructor (Mathematics)*, 1969
B.S.E.E., Johns Hopkins University; M.S., Auburn University.
- KIDD, JUSTIN ESTES *Instructor (English)*, 1967
B.A., Rice University; M.A., University of Virginia.
- KIESEL, GEORGE K. *Professor (Large Animal Surgery & Medicine)*, 1955, 1968
B.S., Rutgers University; D.V.M., Cornell University.
- KILLIAN, ALBERT F. *Registrar*, 1964, 1966
B.S., M.S., Auburn University.

- KIM, HYUNG-CHAN..... *Assistant Professor (Foundations of Education)*, 1968, 1969
B.A., M.A., Ed.D., Peabody College.
- KIMBROUGH, PAXSON S. H..... *Instructor (Architecture)*, 1969
B.F.A., Rhode Island School of Design.
- KINCEY, TRULY..... *Professor (Economics & Geography)*, 1957, 1965
A.B., University of Montevallo; M.A., Tulane University; Ph.D., Ohio State University.
- KING, CHARLES C., JR..... *Associate Professor (Agronomy & Soils)*, 1952, 1954
B.S., M.S., Auburn University; Ph.D., North Carolina State University.
- KING, NELSON BRYAN..... *Assistant Dean, School of Veterinary Medicine,
and Coordinator (Animal Health Research)*, 1968
B.Sc.Agr., D.V.M., M.Sc., Ph.D., Ohio State University.
- KINZER, EARL..... *Associate Professor (Physics)*, 1967
B.E.P., M.S., Auburn University; Ph.D., University of Virginia.
- KITELY, GARY W..... *Assistant Professor (Aerospace Engineering)*, 1965
B.S., University of Minnesota; M.S., Purdue University; F.A.A., A & P Certificate, Parks College.
- KJAR, HAROLD A..... *Associate Professor (Large Animal Surgery & Medicine)*, 1968
D.V.M., Iowa State University.
- KLEPINGER, WALTER J..... *Assistant Professor (Engineering Graphics)*, 1934, 1956
B.M.E., Ohio State University.
- KLEPPER, ELIZABETH L..... *Assistant Professor (Botany & Plant Pathology)*, 1968
B.A., Vanderbilt University; M.A., Ph.D., Duke University.
- KLONTZ, HAROLD E..... *Professor (Economics & Geography)*, 1946, 1950
A.B., Berea College; Ph.D., University of North Carolina.
- KNIGHT, MELVIN E..... *Assistant Professor (Learning Resources)*, 1968
B.S., Troy State University; M.A., M.A., University of Alabama.
- KNIGHT, W. CHARLES..... *Professor (Textile Engineering)*, 1946, 1961
B.T.E., Auburn University; M.S.T.E., Georgia Institute of Technology.
- KNOTT, NANCY C..... *Instructor (Speech), Director of Pre-School
Deaf Education*, 1969
B.S., University of Texas; M.A., Our Lady of the Lake.
- KOCHHAR, MAN MOHAN..... *Associate Professor (Pharmacy)*, 1964, 1967
B.S., Amritsar Medical College, India; M.S., Ph.D., University of Texas.
- KOON, JOE L..... *Assistant Professor (Agricultural Engineering)*, 1967, 1968
B.S., M.S., Ph.D., Auburn University.
- KOSOLAPOFF, GENNADY M..... *Professor (Chemistry)*, 1948, 1969
B.S., Ch.E., Cooper Union; M.S., Sc.D., University of Michigan.
- KOUSKOLEKAS, COSTAS A..... *Assistant Professor (Zoology-Entomology)*, 1967
B.S., University of Salonica; M.S., University of Missouri; Ph.D., University of Illinois.
- KRAFT, LELAND M., JR..... *Assistant Professor (Civil Engineering)*, 1969
B.C.E., M.S., Ph.D., Ohio State University.
- KRIBS, ANNA E..... *Social Science Bibliographer and Assistant Professor,
Library*, 1961, 1968
A.B., Louisiana Polytechnic Institute; M.S.L.S., Louisiana State University.
- KRISHNAMURTHY, N..... *Associate Professor (Civil Engineering)*, 1967
B.Sc., B.E., University of Mysore, India; M.S., Ph.D., University of Colorado.
- KRISTA, LAVERNE M..... *Assistant Professor (Anatomy & Histology)*, 1969
B.S., M.S., South Dakota State College; D.V.M., Ph.D., University of Minnesota.
- KRUGER, NATALIE..... *Teaching Associate (Music)*, 1969
A.B., Oberlin College; M.M., New England Conservatory of Music.
- KULAS, CHRISTOPHER E..... *Instructor (Electrical Engineering)*, 1968
B.S.E.E., General Motors Institute; M.S., Auburn University.
- KUMMER, FRED A..... *Professor and Head (Agricultural Engineering)*, 1935, 1969
B.S.M.E., M.S., Auburn University.
- LAIR, CHARLES V..... *Professor (Psychology)*, 1966, 1969
B.A., M.A., University of Missouri; Ph.D., Vanderbilt University.
- LALOR, WILLIAM F..... *Assistant Professor (Agricultural Engineering)*, 1968
B.Agr.Sc., University College (Dublin); M.S., Michigan State University; Ph.D., Iowa State University.
- LAMAR, ANDREW W., JR..... *Commandant and Professor (Military Science)*, 1968
B.S., United States Military Academy; Colonel, U.S. Army.
- LAMAR, MARY GEORGE..... *Associate Professor (Management)*, 1933, 1963
B.S., Auburn University; M.A., New York University.
- LAMBERT, JOSEPH P..... *Instructor (English)*, 1967
B.S., Jacksonville State University.

- LAMPRU, PAUL D. _____ *Instructor (Anatomy & Histology)*, 1969
D.V.M., Auburn University.
- LAND, JAMES E. _____ *Research Professor (Chemistry)*, 1938, 1966
B.S., Clemson University; M.S., Tulane University; Ph.D., University of North Carolina.
- LAND, JEANNETTA T. _____ *Professor (Health, Physical Education & Recreation)*, 1941, 1943
B.S., University of Alabama; M.A., Columbia University.
- LANE, NANELLEN _____ *Instructor (Health, Physical Education & Recreation)*, 1969
B.S., M.S., University of Alabama.
- LARAWAY, W. FRANK, JR. _____ *Assistant Professor (Architecture)*, 1969
A.B., Guilford College; B.A., University of Michigan.
- LARIMORE, WILLIAM H. _____ *Assistant Professor (Aerospace Studies)*, 1966
B.S., Auburn University; Major, U.S. Air Force.
- LARSEN, HARRY S. _____ *Assistant Professor (Forestry)*, 1959
B.S., Rutgers University; M.S., Michigan State University; Ph.D., Duke University.
- LATHAM, ARCHIE J. _____ *Assistant Professor (Botany & Plant Pathology)*, 1967
B.S., Idaho State College; M.S., University of Idaho; Ph.D., University of Illinois.
- LATIMER, MARGARET K. _____ *Instructor (Political Science)*, 1966, 1968
B.A., Agnes Scott College; M.A., Vanderbilt University.
- LATIMER, PAUL H. _____ *Associate Professor (Physics)*, 1962
B.S., Northwestern University; M.S., Ph.D., University of Illinois.
- LATTA, HUGH L. _____ *Associate Professor (Architecture)*, 1967
B.D., University of Florida; M.F.A., Cranbrook Academy of Art.
- LAUDERDALE, WILLIAM _____ *Assistant Professor (Foundations of Education)*, 1964
B.S., Ed.M., University of Illinois; Ph.D., Michigan State University.
- LAVORE, ROMAN _____ *Assistant Professor (Music)*, 1966, 1967
B.M., M.S., Julliard School of Music.
- LAWRENCE, FAYE BUTTRAM _____ *Assistant Professor (Zoology-Entomology)*, 1946, 1959
B.A., Huntingdon College; M.S., Auburn University.
- LAWSON, STANTON C. D. _____ *Professor (Mechanical Engineering)*, 1958, 1963
B.A.Sc., University of Toronto; M.S., University of Michigan.
- LAYFIELD, CLAUDE B. _____ *Associate Professor (Industrial Engineering)*, 1947, 1958
B.A.A., B.I.M., Auburn University; M.S., Georgia Institute of Technology.
- LAYFIELD, MARY A. _____ *Associate Professor (Family & Child Development)*, 1953, 1963
B.S., M.S., M.S.Ed., Ed.D., Auburn University.
- LEFFARD, WARREN L. _____ *Associate Professor (Vocational & Adult Education)*, 1956, 1969
B.S., M.S., Auburn University; Ph.D., University of Missouri.
- LEHMANN, RUTH _____ *Instructor (English)*, 1965
B.A., La Grange College; M.A., Auburn University.
- LEISCHUCK, GERALD S. _____ *Director of Institutional Analysis and Assistant Professor (Foundations of Education)*, 1963, 1966
A.B., M.A., Colorado State College; Ed.D., Auburn University.
- LEONARD, J. LYNN, III _____ *Instructor (Small Animal Surgery & Medicine)*, 1969
D.V.M., Cornell University.
- LEPPERT, ALFRED M. _____ *Assistant Professor (Mechanical Engineering)*, 1965
B.M.E., Georgia Institute of Technology; M.S., Stanford University; Engineer, Stanford University.
- LEWIS, MARTHA R. _____ *Instructor (Foundations of Education)*, 1969
B.A., Western Maryland College; M.A., University of Alabama.
- LINDNER, CHARLES C. _____ *Assistant Professor (Mathematics)*, 1969
B.S., Presbyterian College; M.S., Ph.D., Emory University.
- LITTLE, ALTON S. _____ *Associate Professor (Engineering Graphics)*, 1947, 1955
B.C.E., Auburn University; M.S.C.E., Georgia Institute of Technology.
- LITTLE, TERRELL D. _____ *Assistant Professor (Management)*, 1968, 1969
B.S., LL.B., University of Alabama.
- LITTLETON, TAYLOR D. _____ *Dean of Undergraduate Studies and Professor (English)*, 1957, 1969
B.S., M.A., Ph.D., Florida State University.
- LLULL, HARRY PETER _____ *Science Librarian and Instructor, Library*, 1968
A.S., Marion Institute; B.S., Auburn University; A.M.L.S., University of Michigan.
- LOGUE, HANCHEY E., JR. _____ *Assistant Professor (English)*, 1964, 1968
B.S., Auburn University.
- LOPICCOLO, JOHN, JR. _____ *Instructor (Speech)*, 1969
B.S.S., Loyola University; M.A., Louisiana State University.

- LORENDO, EUGENE L. _____ Assistant Football Coach, 1951
B.S., University of Georgia.
- LORENDO, JANE C. _____ Assistant Professor (Consumer Affairs), 1956, 1966
B.S., University of Minnesota; M.S., Auburn University.
- LOWRY, JAMES LEE _____ Professor (Electrical Engineering), 1955, 1965
B.E.E., M.E., Auburn University; Ph.D., University of Florida.
- LUCAS, AARON _____ Assistant Director (Cooperative Education), 1969
B.S., Alabama Christian College; B.S., Auburn University; M.S., Troy State University.
- LUTHER, WILLIAM A., JR. _____ Assistant Professor (Military Science), 1967
B.S., United States Military Academy; Major, U.S. Army.
- LYLE, JAMES A. _____ Professor and Head (Botany & Plant Pathology), 1947, 1969
B.S., University of Kentucky; M.S., North Carolina State University; Ph.D., University of Minnesota.
- LYNCH, KEITH DEAN _____ Research Associate (Forestry), 1969
B.S., M.S., Oklahoma State University.
- LYNN, WILLIAM J. _____ Head Basketball Coach, 1951, 1963
B.S., Auburn University.
- MACKENZIE, KARIN B. _____ Instructor (Sociology), 1967
B.A., M.A., University of Mississippi.
- MAEHL, WILLIAM HARVEY _____ Professor (History), 1968
B.Sc., M.A., Northwestern University; Ph.D., University of Chicago.
- MAGHSOODLOO, SAEED _____ Assistant Professor (Industrial Engineering), 1969
B.S., M.S., Ph.D., Auburn University.
- MAPLES, GLENNON _____ Assistant Professor (Mechanical Engineering), 1966
B.S., M.S., Mississippi State University; Ph.D., Oklahoma State University.
- MARCINKO, DOROTHY K. _____ Catalog Librarian and Instructor, Library, 1968
B.A., University of the Philippines; M.L.S., Texas Woman's University.
- MARSHALL, NORTON L. _____ Professor (Botany & Plant Pathology), 1958, 1966
B.S., Pennsylvania State University; M.S., Ph.D., University of Maryland.
- MARTIN, DONALD FRANCIS _____ Instructor (English), 1968
A.B., Duke University; M.A., Auburn University.
- MARTIN, FRED W. _____ Professor (Aerospace Engineering), 1956
B.S.A.E., M.S., Ph.D., Virginia Polytechnic Institute.
- MARTIN, JAMES W. _____ Instructor (Health, Physical Education & Recreation), 1969
B.F., M.A., Stephen F. Austin State University.
- MARTIN, WILLIS C., JR. _____ Instructor (Horticulture), 1951, 1958
B.S., Auburn University.
- MARTINCIC, ALBERT FRANK _____ Assistant Professor (Health, Physical Education & Recreation), 1948, 1953
B.S., M.A., University of Iowa.
- MARTY, EDWARD C. _____ Professor (Building Technology), 1939, 1957
B.Arch., M.Arch., Auburn University.
- MASON, WILLIAM H. _____ Assistant Professor (Botany & Plant Pathology and Zoology-Entomology), and Coordinator of General Biology, 1966, 1969
B.S., Arkansas Polytechnic College; M.Ed., Ed.D., University of Georgia.
- MAXWELL, JOSEPH W. _____ Associate Professor and Head (Family & Child Development), 1969
B.A., Louisiana College; B.D., Southern Baptist Theological Seminary; M.S., Ph.D., Florida State University.
- MAYNOR, HAL WHARTON, JR. _____ Professor (Mechanical Engineering), 1959
B.S., M.S., D. of Engr., University of Kentucky.
- MCCAIN, CHARLES SIDNEY _____ Assistant Professor (Microbiology), 1966
D.V.M., Auburn University; M.S., University of Missouri.
- MCCAMPBELL, MARTHA _____ Instructor (Health, Physical Education & Recreation), 1968
B.S., Iowa State University.
- MCCANN, ESTHER N. _____ Catalog Librarian & Instructor, Library, 1955, 1964
B.S., Indiana State College; B.S.L.S., University of Denver.
- MCCASKEY, THOMAS A. _____ Assistant Professor (Dairy Science), 1967
B.S., Ohio University; M.S., Ph.D., Purdue University.
- MCCLUNG, JAMES D. _____ Associate Professor (Engineering Graphics), 1941, 1946
B.S., Ed.M., University of Oklahoma.
- MCCOY, E. WAYNE _____ Assistant Professor (Agricultural Economics & Rural Sociology), 1967
B.S., M.S., University of Nevada; Ph.D., University of Tennessee.

- McCOLLERS, GAIL H. *Coordinator of Testing and Research, Student Affairs, 1961, 1969*
B.S., M.Ed., Auburn University.
- McINTYRE, SHERWOOD C. *Professor (Psychology), 1948*
B.A., B.Sc., M.A., Ph.D., Ohio State University.
- McKEE, JOHN M. *Research Lecturer (Psychology), 1967*
B.A., Emory University; Ph.D., University of Tennessee.
- McKIBBEN, JOHN S. *Associate Professor (Anatomy & Histology), 1969*
B.S., D.V.M., Purdue University; M.S., Ph.D., Iowa State University.
- *McKOWN, DELOS BANNING *Assistant Professor (Philosophy), 1962*
B.A., Alma College; B.D., College of the Bible (Kentucky); M.A., University of Kentucky; Diploma, University of Geneva (Switzerland).
- McLEOD, FRANCES R. *Assistant Professor (English), 1945, 1955*
A.B., Huntingdon College; M.S., Auburn University.
- McMATH, JANE A. *Instructor (Economics & Geography), 1969*
A.B., University of South Carolina; M.Ed., Auburn University.
- McMILLAN, MALCOLM COOK *Professor and Head (History), 1948, 1964*
A.B., M.A., University of Alabama; Ph.D., University of North Carolina.
- McMURTRY, THOMAS EDWARD *Assistant Professor (Industrial Laboratories), 1959, 1963*
B.S., M.Ed., Auburn University.
- McNORTON, CLAUDE *Assistant Professor (Political Science), 1946, 1949*
A.B., University of Alabama; M.S., Louisiana State University; M.A., New York University.
- MEADOWS, MARK E. *Associate Professor and Head (Counselor Education), 1969*
B.S., Georgia Southern College; M.A., Peabody College; Ed.D., University of Georgia.
- MEANS, RICHARD K. *Professor (Health, Physical Education & Recreation), 1964*
B.S., M.A., University of Minnesota; Ed.D., University of California, Los Angeles.
- MELIUS, PAUL *Professor (Chemistry), 1957, 1965*
B.S., Bradley University; M.S., University of Chicago; Ph.D., Loyola University of Chicago.
- MELZER, DOROTHY G. *Assistant Professor (English), 1968*
Ph.B., A.M., University of Chicago.
- MENZIES, DOUGLAS W. *Instructor (Architecture), 1967*
B.S., B.A., California State Polytechnic College.
- METZGER, ABRAM B. *Assistant Professor (Political Science), 1937, 1947*
B.B.A., University of Chattanooga; M.S., Auburn University.
- MICHAEL, MARION C. *Associate Professor (English), 1965, 1967*
A.B., University of Georgia; M.A., University of Virginia; Ph.D., University of Georgia.
- MICHEL, THOMAS JULIAN *Assistant Professor (Counselor Education), 1967*
B.S.Ed., M.Ed., University of Florida; Ed.D., University of Georgia.
- MICKELSEN, WILLIAM *Assistant Professor (Music), 1968*
B.A., Brigham Young University; M.A., Utah University.
- MILES, LOUISE WALTERS *Assistant Professor (Secondary Education), 1966*
B.S., Jacksonville State University; M.A., George Peabody College.
- MILLER, HAMPTON *Assistant Professor (Electrical Engineering), 1938, 1946*
B.S.E.E., Auburn University.
- MILLER, JAMES H. *Instructor (Counselor Education), 1969*
B.S., Concord College; M.S., West Virginia University.
- MILLER, JOHN A. *Assistant Professor (Industrial Engineering), 1969*
B.S., M.S., Ph.D., Louisiana State University.
- MILLER, MILTON ALAN *Instructor (Marketing & Transportation), 1968*
B.S., University of Tennessee; M.B.A., Auburn University.
- MILLER, THOMAS EDGAR *Associate Professor (Learning Resources), 1967*
B.S., Berry College; M.S., Stout Institute; Ed.D., Indiana University.
- MILLER, W. R. *Associate Professor (Microbiology), 1960, 1968*
D.V.M., M.S., Auburn University; Ph.D., Purdue University.
- MILLMAN, MARY M. *Instructor (Foreign Languages), 1968*
A.B., University of Michigan; M.A., Eastern Michigan University.
- MILLMAN, RICHARD G. *Professor and Head (Architecture), 1968*
B.A., M.A., University of Michigan.
- MILTON, JAMES L. *Instructor (Small Animal Surgery & Medicine), 1967, 1969*
D.V.M., Auburn University.
- MIMS, NANCY C. *Instructor (Art), 1969*
B.F.A., Auburn University.

- MIMS, THOMAS EARLY.....Assistant Professor (Art), 1966
B.S., M.A., School of Art, East Carolina University.
- MITCHELL, DOROTHY N.....Instructor (Art), 1960, 1965
B.A., Auburn University.
- MITCHELL, SAM.....Assistant Football Coach, 1966
B.S., Auburn University.
- MOATES, WILLIAM J.....Instructor (Vocational & Adult Education), 1969
B.S., Auburn University; M.A., University of Alabama.
- MONTERER, FREDERICK.....Assistant Professor (English), 1968
B.A., M.A., Ph.D., Arizona State University.
- MONTGOMERY, R. W.....Professor and Head (Vocational & Adult Education), 1940, 1963
B.S., M.S., Auburn University; Ph.D., Ohio State University.
- MOON, W. HAROLD.....Associate Professor (Psychology), 1956, 1969
B.S., Auburn University; Ph.D., Florida State University.
- MOORE, CLAUDE H.....Professor and Head (Poultry Science), 1956, 1969
B.S., Auburn University; M.S., Kansas State University; Ph.D., Purdue University.
- MOORE, E. B., JR.....Associate Professor and Coordinator of Graduate Programs for Junior College Faculty (Educational Administration), 1967, 1969
A.B., M.B.A., Syracuse University; Ed.D., University of Florida.
- MOORE, JANE B.....Assistant Professor (Health, Physical Education & Recreation), 1959, 1969
B.A., Judson College; M.S., University of Tennessee; Ed.D., University of Alabama.
- MOORE, JOAN S.....Instructor (Health, Physical Education, & Recreation), 1968
B.S., West Chester State College.
- MOORE, JOSEPH C.....Assistant Professor (Horticulture), 1938, 1947
B.S., Auburn University; M.S., Washington University.
- MOORE, MARY VIRGINIA.....Assistant Professor (Speech), 1956, 1964
A.B., Valdosta State College; M.S., Purdue University.
- MOORE, WAYNE T.....Associate Professor (Music), 1964, 1969
A.B., Elon College; A.M., Ed.D., Columbia University.
- MORGAN, THOMAS E.....Associate Professor (Educational Administration & Supervision), 1968
B.S., Austin Peay State University; M.S., Ed.D., University of Tennessee.
- MORA, E. C.....Professor (Poultry Science), 1958, 1967
B.S., University of New Mexico; M.S., New Mexico State University; Ph.D., Kansas State University.
- MORGAN, WILLIAM W.....Associate Professor (Industrial Engineering), 1954, 1965
B.B.A., University of Georgia; M.S.I.M., Georgia Institute of Technology.
- MORTON, GLENN P.....Assistant Professor (Textile Engineering), 1967
B.A., McMurry College; M.S., Auburn University.
- MORTON, SUE B.....Associate Professor (Consumer Affairs), 1962, 1967
B.S., M.S., Ph.D., Texas Woman's University.
- MOUNT, ROBERT HUGHES.....Associate Professor (Zoology-Entomology), 1954, 1966
B.S., M.S., Auburn University; Ph.D., University of Florida.
- MOUNTCASTLE, WILLIAM R.....Assistant Professor (Chemistry), 1966
B.S., Ch.E., Georgia Institute of Technology; M.S., Ph.D., University of Alabama.
- MOWAT, BARBARA A.....Assistant Professor (English), 1968
B.S., Ph.D., Auburn University; M.A., University of Virginia.
- MOWAT, JOHN G.....Associate Professor (Physics), 1957, 1964
B.S., M.S., Stanford University; Ph.D., University of Virginia.
- MURPHY, JULIA H.....Instructor (Mathematics), 1963, 1965
B.S., M.S., Auburn University.
- MYERS, RONALD L.....Assistant Professor (Management), 1968
A.B., Bradley University; J.D., Drake University Law School.
- MYLES, WILLIAM R.....Associate Professor (Management), 1949, 1957
B.S., M.A., University of Pittsburgh.
- NADOLSKY, JULIAN.....Instructor (Vocational & Adult Education), 1968
B.S., M.Ed., Pennsylvania State University.
- NALE, LUTHER J.....Research Associate (Electrical Engineering), 1966, 1969
B.S.E.E., Auburn University; M.S., University of Alabama.
- NEAL, JAMES E.....Professor (Microbiology), 1951, 1959
B.S., Mississippi State University; D.V.M., Auburn University; M.S., Texas A&M University.
- NEELY, W. C.....Assistant Professor (Chemistry), 1966
B.S., Mississippi State University; M.S., Ph.D., Louisiana State University.

- NELSON, DANIEL J. _____ *Instructor (Political Science)*, 1969
A.B., Wheaton College; A.M., University of Michigan.
- NEWELL, ANNIE LAURA _____ *Professor (Elementary Education)*, 1958, 1967
A.B., LaGrange College; M.S., Ed.D., Auburn University.
- NEWTON, MERLIN O. _____ *Instructor (History)*, 1964
B.A., Huntingdon College; M.A., Tulane University.
- NEWTON, WESLEY P. _____ *Associate Research Professor (History)*, 1964, 1969
A.B., University of Missouri; M.A., Ph.D., University of Alabama.
- NICHOLS, GROVER T. _____ *Associate Professor (Electrical Engineering)*, 1947, 1950
B.E.E., Auburn University; M.S., Georgia Institute of Technology.
- NICHOLS, JAMES O. _____ *Assistant Professor (Aerospace Engineering)*, 1960
B.S.A.E., M.S.E., Ph.D., University of Alabama.
- NICHOLS, SAMUEL HARDING, JR. _____ *Professor (Chemistry)*, 1944, 1955
A.B., Centre College of Kentucky; M.S., Ph.D., Ohio State University.
- NIST, JOHN A. _____ *Professor (English)*, 1966
A.B., DePauw University; M.A., Ph.D., Indiana University.
- NIX, PAUL E. _____ *Head Baseball Coach and Assistant Football Coach*, 1963, 1969
B.S., Troy State University; M.Ed., Auburn University.
- NOLAND, RONALD G. _____ *Assistant Professor (Elementary Education)*,
Director, Reading Clinic, 1969
B.S., M.Ed., Louisiana State University; Ed.D., University of Southern Mississippi.
- NORTON, JOSEPH D. _____ *Associate Professor (Horticulture)*, 1954, 1967
B.S., M.S., Auburn University; Ph.D., Louisiana State University.
- OLIVER, WILLIAM E. _____ *Assistant Professor (Art)*, 1968
B.S., University of Alabama.
- OLSON, DOUGLAS J. _____ *Assistant Professor (Art)*, 1968
B.F.A., Layton School of Art; M.F.A., University of Cincinnati.
- ORR, FRANK MARION _____ *Professor (Building Technology)*, 1928, 1957
B.S., M.Arch., Auburn University.
- ORR, HENRY P. _____ *Professor (Horticulture)*, 1947, 1962
B.S., Auburn University; M.S., Ph.D., Ohio State University.
- OTT, JAMES W. _____ *Assistant Professor (Mathematics) and Systems Programmer, Computer Center*, 1969
B.S., Ph.D., Auburn University.
- OTTIS, KENNETH _____ *Professor (Zoology-Entomology)*, 1953, 1963
B.S., Dakota Wesleyan University; M.S., Ph.D., Iowa State University.
- OUZTS, JAMES W. _____ *Assistant Professor (Speech)*, 1967
B.S., Delta State College; M.A., University of Mississippi; Ph.D., Ohio State University.
- OWSLEY, FRANK L., JR. _____ *Associate Professor (History)*, 1960, 1968
B.A., Vanderbilt University; M.A., Ph.D., University of Alabama.
- PADGETT, WILLIAM T. _____ *Research Associate (Electrical Engineering)*, 1967, 1969
B.S.E.E., Auburn University.
- PARKER, MELVILLE G. _____ *Instructor (Vocational & Adult Education)*, 1967
B.S., M.Ed., North Texas State University.
- PARKS, PAUL F. _____ *Assistant Dean, Graduate School, Associate Professor*,
(Animal Science), 1965, 1969
B.S., M.S., Auburn University; Ph.D., Texas A&M University.
- PARTIN, ROBERT L. _____ *Professor (History)*, 1937, 1947
B.S., Middle Tennessee State University; M.A., Ph.D., Peabody College.
- PATRICK, WALTON R. _____ *Professor and Head (English)*, 1946, 1947
B.S., Mississippi State University; M.A., Ph.D., Louisiana State University.
- PATTERSON, ADELAID _____ *Assistant Professor (English)*, 1961, 1967
A.B., University of Richmond; M.A., Auburn University.
- PATTERSON, RICHARD McCARTY _____ *Professor (Botany & Plant Pathology)*, 1949, 1968
B.S., M.S., University of Florida; Ph.D., Pennsylvania State University.
- PATTERSON, TROY B. _____ *Professor (Animal Science)*, 1957, 1965
B.S., Mississippi State University; M.S., Ph.D., Texas A&M University.
- PAUSON, JOHN J. _____ *Professor and Head, (Philosophy)*, 1969
B.A., M.A., Gonzaga; Ph.D., University of Fribourg, Switzerland.
- PAYNE, VICTOR E., JR. _____ *Assistant Professor (Aerospace Studies)*, 1968
B.A., Rutgers University; Captain, U.S. Air Force.
- PEAK, JOHN H. _____ *Professor and Head (Foreign Languages)*, 1967
A.B., Hampden-Sydney College; M.A., Ph.D., University of North Carolina.

- PEARSON, ALLEN M. *Professor (Zoology-Entomology)*, 1937, 1957
B.S., Auburn University; M.S., Ph.D., Iowa State University.
- PEDERSOLI, WALDIR M. *Assistant Professor (Physiology & Pharmacology)*, 1967
D.V.M., University of Minas Gerais, Brazil; M.S., Ph.D., University of Illinois.
- PEET, HELEN H. *Instructor and Humanities Bibliographer, Library*, 1937, 1959
A.B., Mississippi State College for Women; M.A., Tulane University.
- PELL, KYNRIC M. *Assistant Professor (Aerospace Engineering)*, 1968
B.A.S.E., M.S., Ph.D., University of Florida.
- PERKINS, DONALD Y. *Professor and Head (Horticulture)*, 1966, 1969
B.S., M.S., Louisiana State University; Ph.D., Cornell University.
- PERKINS, WARREN S. *Instructor (Textile Engineering)*, 1968
B.S.T.C., M.S., Clemson University.
- PERRY, NORMAN C. *Professor (Mathematics)*, 1953, 1961
A.B., University of California; M.A., Ph.D., University of Southern California.
- PERSONS, CAROLINE C. *Assistant Professor and Science Bibliographer, Library*, 1963, 1968
A.B., Mississippi State College for Women; B.S.L.S., Peabody College.
- *PETERSON, CHARLES H. *Assistant Professor (Civil Engineering)*, 1962
B.C.E., M.C.E., Auburn University.
- PETERSON, JOE G. *Associate Professor (Chemistry)*, 1948, 1959
B.S., M.S., Auburn University.
- PETTUS, ROBERT OLIN *Instructor (Electrical Engineering)*, 1967
B.S., M.Ed., E.ed., Auburn University.
- PFEIL, EVA *Associate Professor (Architecture)*, 1961, 1965
B.I.D., M.V.C., Ulm Graduate School of Design; Certificate Psychology, University of Zurich.
- PHILLIPS, CHARLES L. *Professor (Electrical Engineering)*, 1959, 1965
B.E.E., M.S.E.E., Ph.D., Georgia Institute of Technology.
- PHILLIPS, JOE *Assistant Professor (Textile Technology)*, 1959, 1960
B.S.T.E., Auburn University.
- PHILLIPS, PHYLLIS P. *Assistant Professor (Speech)*, 1963, 1967
B.S., M.Ed., Ed.D., Auburn University.
- PHILLIPS, RAY C. *Associate Professor (Foundations of Education) and
Coordinator (Laboratory Experiences)*, 1961, 1966
B.S., Middle Tennessee University; M.A., George Peabody College; Ed.D., Auburn University.
- *PICKARD, EDWARD EARL *Assistant Professor (Architecture)*, 1965
B.M.Ed., Louisiana State University; B.S., B.Arch., Georgia Institute of Technology.
- PICKENS, JENETTA W. *Nursery School Teacher (Family & Child
Development)*, 1969
B.S., Alabama Polytechnic Institute; M.A., Auburn University.
- PICKERING, WILLIAM ALSTON *Assistant Professor (Political Science)*, 1967, 1968
A.B., M.A., Emory University; Ph.D., University of Alabama.
- PICKLE, HAL B. *Professor (Management)*, 1969
B.B.A., M.B.A., North Texas State College; Ph.D., University of Arkansas.
- PIDHAINY, OLEH S. *Associate Professor (History)*, 1969
B.A., University of Toronto; M.A., Ph.D., McGill University.
- PITTS, ROBERT GILES *Professor and Head (Aerospace Engineering)*, 1935, 1944
B.A.E., Auburn University; M.S., California Institute of Technology.
- PORTER, MARY L. *Instructor (Family & Child Development)*, 1969
B.S., M.S., University of Alabama.
- POSEY, HENRY G. *Associate Professor (Forestry)*, 1950, 1959
B.S.F., M.S.F., North Carolina State University.
- POSNAK, ALEXANDER R. *Assistant Professor (Foreign Languages)*, 1968
B.A., University of Maryland; M.S., George Washington University.
- POTTER, MARY R. *Instructor (Consumer Affairs)*, 1969
B.S., Georgia Southern College; M.H.E., University of Georgia.
- POWELL, DAVID E. *Instructor (Mathematics)*, 1967
B.S., M.Ed., M.S., Auburn University.
- POWELL, WILLIAM E., III *Research Associate (Animal Science)*, 1969
B.S., Auburn University.
- POWERS, ROBERT D. *Associate Professor (Pathology & Parasitology)*, 1969
B.S., University of Tennessee; D.V.M., Auburn University; Ph.D., University of Tennessee Medical Units.
- PRATHER, EDMUND ELLIS *Associate Professor (Zoology-Entomology)*, 1941, 1950
B.S., Auburn University; M.S., University of Michigan.

- PREUS, PAUL K. *Assistant Professor (Education Administration)*, 1969
B.A., Luther College; B.E., University of Puget Sound; M.Ed., Central Washington State College; Ph.D., University of Texas.
- **PRICE, EDWIN O. *Professor (Chemistry)*, 1946, 1957
A.B., University of Colorado; M.S., Ph.D., Ohio State University.
- PROFES, JOHN C. *Instructor (Mathematics)*, 1969
B.A., Eastern New Mexico University.
- PRUETT, HERMAN T. *Associate Professor (Vocational & Adult Education)*, 1949, 1960
B.S., M.Ed., Auburn University.
- PUCKETT, JOHN R. *Assistant Professor (Health, Physical Education & Recreation)*, 1966
B.S., East Tennessee State University; M.S., Ed.D., University of Tennessee.
- PUNKE, HAROLD H. *Professor (Foundations of Education)*, 1949
B.S., M.S., University of Illinois; Ph.D., University of Chicago.
- RACHELS, SHIRLEY H. *Instructor (English)*, 1969
B.S., Florida State University; M.A., Peabody College.
- RAINER, REX KELLY *Professor and Head (Civil Engineering)*, 1962, 1968
B.C.E., M.C.E., Auburn University; Ph.D., Oklahoma State University.
- RAMEY, GEORGE E. *Instructor (Civil Engineering)*, 1965
B.S.C.E., M.S.C.E., Auburn University.
- RAMSEY, JOHN S. *Assistant Professor (Zoology-Entomology)*, 1967, 1969
B.S., Cornell University; Ph.D., Tulane University.
- RASH, JOE M. *Associate Professor (Pharmacy)*, 1948
B.S., Carson-Newman College; B.S., M.S., Auburn University.
- *RAWLINS, JOSEPH T. *Assistant Professor (Music)*, 1965
B.M., M.Music, Louisiana State University.
- REA, ROBERT RIGHT *Alumni Professor (History)*, 1950, 1961
A.B., University of Friends; M.A., Ph.D., Indiana University.
- REAGAN, HUGH D. *Associate Professor (History)*, 1948, 1963
B.A., M.A., Emory University; Ph.D., University of Texas.
- REAVES, C. A. *Research Lecturer (Agricultural Engineering)*, 1951, 1968
B.S., Auburn University; M.S., University of Missouri; Ph.D., Auburn University.
- REDDING, RICHARD W. *Professor (Small Animal Surgery & Medicine and Physiology & Pharmacology)*, 1968, 1969
D.V.M., M.Sc., Ph.D., Ohio State University.
- REECE, JOE W. *Associate Professor (Mechanical Engineering)*, 1964, 1967
B.N.E., M.S., North Carolina State University; Ph.D., University of Florida.
- REED, COKE S. *Assistant Professor (Mathematics)*, 1967
B.S., M.A., Ph.D., University of Texas.
- REHLING, C. J. *Research Lecturer of Toxicology (Pharmacy)*, 1964
B.S., M.S., Auburn University; Ph.D., University of Wisconsin; LL.B., Jones Law School.
- RENOLL, ELMO S. *Associate Professor (Agricultural Engineering)*, 1949, 1955
B.S., Auburn University; M.S., Iowa State University.
- REYES, GABRIEL DE LOS *Assistant Professor (Foreign Languages)*, 1967
Doctor of Laws, University of Havana; M.A., Louisiana State University; Ph.D., University of Kentucky.
- REYNOLDS, TED M. *Instructor (Anatomy-Histology)*, 1966
D.V.M., Auburn University.
- RICHARDSON, JESSE M. *Professor (Economics & Geography)*, 1943, 1957
B.S., M.A., University of Alabama; Ph.D., Peabody College.
- RITLAND, RAYMOND W. *Professor (Economics & Geography)*, 1957, 1959
B.S.C., M.A., Ph.D., University of Iowa.
- ROBBINS, EDWIN E. *Assistant Professor (Military Science)*, 1968
B.S.C.E., The Citadel; Lt. Col., U.S. Army.
- ROBERTS, CHARLES S. *Professor (Pathology & Parasitology) and Director, Alabama Veterinary Diagnostic Laboratory*, 1947, 1963
D.V.M., Auburn University; M.S., Michigan State University.
- ROBERTS, LEWIS *Instructor (Aerospace Engineering)*, 1968
B.A., Brown University.
- ROBERTSON, B. T. *Assistant Professor (Physiology & Pharmacology)*, 1960, 1963
B.S., University of Kentucky; D.V.M., M.S., Auburn University.
- ROBERTSON, FLOYD C. *Assistant Professor (Secondary Education)*, 1968
B.S., M.S., Western Illinois University; Ed.D., Brigham Young University.

*On leave.

**Deceased.

- ROBINSON, CECIL EUGENE.....Associate Professor (Mathematics), 1962, 1965
B.S., Auburn University; M.A., Ph.D., University of Alabama.
- ROBINSON, LEONARD A.....Professor and Head (Accounting & Finance), 1969
B.S., M.S., Auburn University; D.B.A., Georgia State University.
- ROBINSON, WALTER J., JR.....Associate Professor (Aerospace Engineering), 1959, 1966
B.S.A.A., Auburn University; M.B.A., University of Denver.
- ROBISON, LLOYD E.....Assistant Professor (Foundations of Education), 1968, 1969
B.S., M.S., Southern Illinois University; Ed.D., Auburn University.
- ROCHESTER, EUGENE W., JR.....Assistant Professor (Agricultural Engineering), 1970
B.S., Clemson University; M.S., North Carolina State University.
- RODEN, JERRY JR.....Instructor (English), 1955, 1967
B.S., M.A., Auburn University.
- RODRIGUES-KABANA, RODRIGO.....Alumni Assistant Professor (Botany &
Plant Pathology), 1965
B.S., M.S., Ph.D., Louisiana State University.
- ROGERS, CHARLES L.....Assistant Professor (Electrical Engineering), 1961, 1964
B.E.E., M.S., Auburn University; Ph.D., Duke University.
- ROGERS, HOWARD T.....Professor (Agronomy & Soils), 1942, 1966
B.S., Virginia Polytechnic Institute; M.S., Michigan State University; Ph.D., Iowa State University.
- ROGERS, WILMER A.....Assistant Professor (Zoology-Entomology), 1964, 1967
B.S., University of Southern Mississippi; M.S., Ph.D., Auburn University.
- ROLLINS, GILBERT H.....Associate Professor (Dairy Science), 1948, 1953
B.S., M.S., Virginia Polytechnic Institute; Ph.D., University of Illinois.
- ROSE, CHARLES S., JR.....Associate Professor (English), 1960, 1969
A.B., Vanderbilt University; M.A., Ph.D., University of Florida.
- ROSE, EITHEL.....Professor (Family & Child Development), 1959
B.S., M.S., Indiana State University; Ph.D., Ohio State University.
- ROSEN, MELVIN.....Assistant Professor and Track Coach (Health, Physical
Education & Recreation), 1955, 1963
B.S., M.A., University of Iowa.
- ROSENBAUM, LAWRENCE.....Professor (Music), 1961, 1966
B.M., University of Arizona; M.M., University of Arkansas.
- ROSS, CONRAD H.....Assistant Professor (Art), 1963
B.F.A., University of Illinois; M.F.A., University of Iowa.
- ROUGHTON, EDGAR L.....Associate Professor (Elementary Education), 1963, 1967
B.S., Georgia Southern College; M.Ed., Texas Technological College; Ph.D., University of South Carolina.
- ROUSE, R. D.....Assistant Dean, School of Agriculture, 1949, 1966
B.S., M.S., University of Georgia; Ph.D., Purdue University.
- RUNGELING, BRIAN S.....Assistant Professor (Economics & Geography), 1969
A.A., B.A., M.A., University of Florida; Ph.D., University of Kentucky.
- RUSSELL, DALLAS WILSON.....Professor (Electrical Engineering), 1959, 1963
B.S.E.E., M.S.E.E., University of Tennessee.
- RYMAL, KENNETH.....Assistant Professor (Horticulture), 1966, 1969
B.S., Massachusetts Institute of Technology; M.S., University of Florida.
- SAJA, CLAUDE V.....Assistant Football Coach, 1964
B.S., M.Ed., Auburn University.
- SALZMANN, FRANK L., III.....Instructor (Mathematics), 1960, 1968
B.S., M.S., Auburn University.
- SAMUELSON, ROBERT E.....Assistant Professor (Architecture), 1969
B.A., University of Texas; M.A., Rice University.
- SANDERS, A. DEWEY.....Assistant Professor (Mathematics), 1946, 1947
B.A., DePauw University; M.A., University of Michigan.
- SANDERS, J. W.....Assistant Professor (Speech), 1952, 1959
B.A., Tampa University; B.A., M.A., University of Florida.
- SANDERSON, KENNETH C.....Assistant Professor (Horticulture), 1966
B.S., Cornell University; M.S., Ph.D., University of Maryland.
- SANTO-THOMAS, MARIA.....Instructor and Science Librarian, Library, 1967
B.S., Kansas State Teachers College; Librarian Degree, University of Havana.
- SANTO-THOMAS, RAUL.....Instructor and General Bibliographer, Library, 1967
B.S., B.A., University of Havana; M.L.S., Kansas State Teachers College; LL.D., University of Havana.
- SARTIN, JAMES L.....Associate Professor (Elementary Education), 1968
B.A., Mississippi College; M.A., Florida State University; Ed.D., Syracuse University.

- SAUNDERS, CHARLES RICHARD. *Professor and Dean Emeritus (Chemistry)*, 1924, 1968
B.S., M.S., Auburn University; Ph.D., University of Nebraska.
- SAUNDERS, ROBERT L. *Professor and Associate Dean, School of Education*, 1957, 1965
B.S., M.S., Ed.D., Auburn University.
- SAWYER, HORACE W. *Instructor (Vocational & Adult Education)*, 1969
B.S., University of South Carolina; M.S., West Virginia University.
- SCARBOROUGH, BILLY H. *Assistant Professor (Aerospace Studies)*, 1967
B.S., University of Southwestern Louisiana; Major, U.S. Air Force.
- SCARBOROUGH, JOHN LEWIS. *Associate Professor (Mechanical Engineering)*, 1947, 1954
B.A.E., B.M.E., Auburn University; M.S., University of Alabama.
- SCARSBROOK, CLARENCE E. *Professor (Agronomy & Soils)*, 1953, 1959
B.S., Auburn University; Ph.D., North Carolina State University.
- SCHAEER, WALTER A. *Professor (Architecture)*, 1960, 1965
B.A.A., Technical Institute of Berne; B.I.D., M.I.D., Ulm Graduate School of Design.
- SCHAFER, R. L. *Research Lecturer (Agricultural Engineering)*, 1964, 1968
B.S., M.S., Ph.D., Iowa State University.
- SCHIED, PAUL W. *Professor (Secondary Education)*, 1957, 1960
A.B., Miami University; A.M., Duke University; Ph.D., Ohio State University.
- SCHILL, FRED G. *Professor and Head (Large Animal Surgery & Medicine)*, 1956, 1959
D.V.M., Auburn University.
- SCHILB, OTTO. *Visiting Lecturer (Architecture)*, 1968
D.I.D., Technical Institute of Berlin, Germany.
- SCHNEIDER, ARTHUR E. *Instructor (English)*, 1965
B.A., DePauw University; M.A., Florida State University.
- SCHUESSLER, VIRADA K. *Assistant Professor (Foundations of Education) and Student Personnel Service*, 1965
B.A., Judson College; M.Ed., Auburn University.
- SCHUG, FREDERICK. *Instructor (Foundations of Education)*, 1969
B.A., Concordia Senior College; M.A., University of Missouri.
- SCHULTZ, F. BERNARD. *Special Lecturer (Laboratory Technology)*, 1962
B.S., St. Ambrose College; M.D., Georgetown University.
- SCOTT, EDWARD ALLEN. *Instructor (Large Animal Surgery)*, 1967
B.S., California State Polytechnic Institute; D.V.M., Washington State University.
- SCOTT, RICHARD A. *Instructor (Vocational & Adult Education)*, 1968
B.S., M.Ed., Auburn University.
- SELMAN, JAMES W. *Assistant Professor (Vocational & Adult Education)*, 1964
B.S., M.S., Ed.D., Florida State University.
- SENN, C. L. *Assistant Football Coach*, 1945, 1948
B.S., Auburn University.
- SFORZINI, RICHARD H. *Professor (Aerospace Engineering)*, 1966
B.S., United States Military Academy; Degree of Mechanical Engineer, Massachusetts Institute of Technology.
- SHANDS, WAYLAND A., JR. *Assistant Professor (Botany & Plant Pathology)*, 1963
B.S., University of Maine; M.S., University of Delaware.
- SHAW, WINFRED A. *Professor (Mechanical Engineering)*, 1958
B.S.G.E., University of Mississippi; M.S.E.M., University of Texas; Ph.D., Stanford University.
- SHELL, E. WAYNE. *Associate Professor (Zoology-Entomology)*, 1952, 1965
B.S., M.S., Auburn University; Ph.D., Cornell University.
- SHELL, WILLIAM B. *Assistant Professor (Secondary Education)*, 1965, 1966
A.B., Wofford College; M.Ed., E.Ed., Auburn University.
- SHERLING, DOROTHY N. *Instructor (Economics & Geography)*, 1969
B.S., M.A.C.T., Auburn University.
- SHERLING, WILLIAM G. *Associate Professor (Aerospace Engineering)*, 1947, 1954
B.A.E., Auburn University; M.S.A.E., Georgia Institute of Technology.
- SHEVLIN, PHILIP BERNARD. *Assistant Professor (Chemistry)*, 1970
B.S., LaFayette College; M.S., Ph.D., Yale University.
- SHIELDS, ALAN J. *Associate Professor (Sociology)*, 1956, 1963
B.A., M.A., North Texas State University.
- SHIELDS, ROBERT P. *Associate Professor (Pathology & Parasitology)*, 1966, 1969
D.V.M., M.S., Auburn University; M.S., University of Arkansas.
- SHRADER, KENNETH R. *Assistant Professor (Pharmacy)*, 1968
B.S., University of Kentucky; M.S., Purdue University.
- SIMMONS, CHARLES F. *Associate Dean School of Agriculture*, 1946, 1951
B.S., M.S., Auburn University; Ph.D., Ohio State University.

- SINK, JACK MERRITT *Assistant Professor (Vocational & Adult Education)*, 1967
B.A., M.S., West Virginia University.
- SINK, JO ELLA *Instructor (Elementary Education)*, 1969
B.A., Berea College; M.A., West Virginia University.
- SKELTON, ROBERT B. *Research Professor (Foreign Languages)*, 1939, 1967
A.B., Michigan State Normal College; M.A., Ph.D., University of Michigan; Certificado, University of Brazil; Certificado, University of Chile.
- SLAGH, TIM DENNIS *Associate Professor (Electrical Engineering)*, 1958, 1965
B.S., Michigan College of Mining and Technology; M.S., Auburn University.
- SMITH, CURTIS R. *Associate Professor (Speech)*, 1969
B.S., M.S., Ph.D., University of Southern Mississippi.
- SMITH, DAVID M. *Instructor and Catalog Librarian, Library*, 1969
B.S., Huntingdon College; M.I.S., Emory University.
- SMITH, DENNIE L. *Assistant Professor (Elementary Education)*, 1969
B.A., M.A., Marshall University; Ed.D., Auburn University.
- SMITH, FLOYD S. *Associate Professor (Mechanical Engineering)*, 1946, 1955
B.S., Virginia Military Institute; B.S.Ch.E., M.S.Ch.E., B.S.M.E., Auburn University.
- SMITH, HAROLD KERMIT, JR. *Instructor (Mathematics)*, 1969
B.S., M.S., North Texas State University.
- SMITH, JAMES W. *Instructor (Management)*, 1968
B.S., Athens College; J.D., Samford University.
- SMITH, LEO ANTHONY *Assistant Professor (Industrial Engineering)*, 1969
B.S.I.E., M.S.I.E., Georgia Institute of Technology; Ph.D., Purdue University.
- SMITH, PAUL H. *Instructor (Microbiology)*, 1968
D.V.M., Auburn University.
- SMITH, ROBERT C. *Alumni Professor (Animal Science)*, 1961, 1969
B.S., Elmhurst College; M.S., Ph.D., University of Illinois College of Medicine.
- SMITH, ROBERT E. *Director of Administrative Data Processing*, 1969
B.S., Southern Illinois University.
- SMITH, WILLIAM STEPHEN *Alumni Professor (Speech)*, 1952, 1959
B.Ed., Northern Illinois State University; M.A., Ph.D., Stanford University.
- SNOW, CHARLES R. *Associate Professor (Management)*, 1969
B.S.I.M., Auburn University; M.S.I.M., Georgia Institute of Technology; D.B.A., Indiana University.
- SNOW, SAMUEL P. *Director of the Center for Urban and Regional
Planning and Professor (Architecture)*, 1947, 1969
- SOMBERG, SEYMOUR I. *Associate Professor (Forestry)*, 1968
B.S.F., Iowa State University; M.F., D.F., Duke University.
- SPARKS, FRANK M. *Associate Professor (Physics)*, 1943, 1946
B.S., Auburn University; M.A., Ph.D., University of Illinois.
- SPEAKE, DAN W. *Assistant Professor (Zoology-Entomology)*, 1955, 1969
B.S., M.S., Ph.D., Auburn University.
- SPEARS, WILLIAM D. *Professor and Head (Psychology)*, 1961
A.B., M.Ed., University of Chattanooga; Ph.D., Peabody College.
- SPEER, WILLIAM ARTHUR *Professor (Architecture)*, 1962, 1967
B.S.Arch., Clemson University; M.Arch., Rensselaer Polytechnic Institute.
- SPENCER, LILLY HESTER *Associate Professor (Consumer Affairs)*, 1928, 1935
B.S., M.S., Oklahoma State University.
- SPRUELL, MICHAEL N. *Assistant Professor and Assistant Coordinator,
Rehabilitation Counselor (Counselor Education)*, 1969
B.S., Auburn University; M.Ed., Ph.D., University of Georgia.
- SQUIRES, C. D. *Associate Professor (Animal Science)*, 1950
B.S., M.A., Ph.D., University of Missouri.
- STALLINGS, JAMES L. *Associate Professor (Agricultural Economics &
Rural Sociology)*, 1969
B.S., M.S., Purdue University; Ph.D., Michigan State University.
- STALLWORTH, TOM A. *Assistant Registrar*, 1965, 1968
B.S., M.B.A., Auburn University.
- STALNAKER, CARROL C. *Associate Professor (Accounting & Finance)*, 1937, 1946
B.A., State College of Iowa; M.A., University of Iowa.
- STANALAND, EUGENE E. *Assistant Professor (Economics & Geography)*, 1960, 1964
B.S., Huntingdon College; M.B.A., University of Alabama.
- STANLAND, RAYMOND E. *Instructor (Architecture)*, 1968
B.I.D., Auburn University.

- STEELE, H. E. *Assistant Dean, School of Business, Professor and Acting Head (Economics & Geography), 1949, 1969*
B.A., M.A., University of Nebraska; Ph.D., Ohio State University.
- STEPHENSON, JOSEPH *Assistant Professor (Music), 1967*
B.M., M.M., Peabody Conservatory.
- STEVENS, FRANK J. *Professor (Chemistry), 1947, 1959*
B.S., University of Illinois; Ph.D., Iowa State University.
- STIMPSON, RITCHIE P. *Professor (Aerospace Studies), 1967*
B.S., Furman University; Colonel, U.S. Air Force.
- STOKES, CHARLIE MACK *Associate Professor (Agricultural Engineering), 1937, 1962*
B.S., M.S., Auburn University.
- STOREY, BRIT ALLAN *Assistant Professor (History), 1967, 1968*
B.A., Adams State College; M.A., Ph.D., University of Kentucky.
- STREET, DONALD R. *Associate Professor (Economics & Geography), 1965, 1968*
B.S., M.S., Auburn University; Ph.D., Pennsylvania State University.
- STREET, MARY GARDNER *Instructor (Management), 1968*
B.S., Jacksonville State University; M.Ed., Auburn University.
- STRENGTH, D. RALPH *Alumni Professor (Animal Science), 1961, 1967*
B.S., M.S., Auburn University; Ph.D., Cornell University.
- STRONG, ROBERT B. *Director of High School and Junior College Relations, 1962, 1967*
B.S., M.S., Auburn University.
- STROUD, OXFORD *Assistant Professor (English), 1950, 1957*
B.S., M.A., Auburn University.
- SWAIM, STEVEN F. *Research Assistant (Small Animal Surgery & Medicine), 1969*
B.S., Kansas State University; D.V.M., Kansas State University.
- SWINGLE, HOMER SCOTT *Research Alumni Professor (Zoology-Entomology), 1929, 1968*
B.S., M.S., D.Sc. (Hon.), Ohio State University.
- SWINSON, WELDON FRANK *Alumni Professor (Mechanical Engineering), 1964, 1969*
B.A., Rice University; B.S.M.E., Texas Technological College; M.S.M.E., Texas A&M University; Ph.D., University of Illinois.
- SYKES, MALTYBY *Professor (Art) and Alumni-Artist-in-Residence, 1942, 1954*
Studied with Wayman Adams, Diego Rivera, John Sloan, George C. Miller, Fernand Leger, Stanley William Hayter, and Andre Lhote.
- SYKES, MARJORIE TYRE *Professor (Music), 1967*
Artist Diploma and B.A., Curtis Institute of Music.
- TAMBLYN, JOHN W. *Professor (Music), 1948, 1962*
B.S., B.S., Auburn University; M.Mus., Ph.D., University of Rochester.
- TANGER, GERALD EUGENE *Professor (Mechanical Engineering), 1958, 1960*
B.S., South Dakota School of Mines and Technology; M.S., Brown University; Ph.D., Oklahoma State University.
- TAUGNER, AGNES B. *Assistant Professor (Art), 1963*
B.F.A., M.F.A., University of Illinois.
- TAYLOR, HOWARD M. *Research Lecturer (Agronomy & Soils), 1966*
B.S., Texas Technological College; Ph.D., University of California.
- TAYLOR, J. H. *Research Lecturer (Agricultural Engineering), 1962, 1968*
B.S., Mississippi State University; Ph.D., Auburn University.
- TAYLOR, JAMES S. *Assistant Professor (Speech), 1969*
B.A., M.A., Auburn University; Ph.D., Florida State University.
- TAYLOR, RONALD S. *Instructor (Geology), 1968*
B.A., Denison University; M.S., University of Kentucky.
- TAYLOR, THOMAS N. *Instructor (Elementary Education), 1969*
B.S., M.Ed., Auburn University.
- TAYLOR, ZELMA LOWELL, JR. *Associate Professor and Head (Chemical Engineering), 1962, 1970*
B.S.Ch.E., University of Idaho; M.S., Auburn University; Ph.D., University of Florida.
- TEER, PATRICIA ANNE *Assistant Professor (Pathology & Parasitology), 1959, 1963*
D.V.M., M.S., Auburn University.
- TEGGINS, JOHN E. *Associate Professor (Chemistry), 1966, 1969*
B.S., Sheffield University; A.M., Ph.D., Boston University.
- TERRILL, ALAN R. *Instructor (Mechanical Engineering), 1966*
B.S., M.E., Pennsylvania State University.
- TERRILL, LAURA LEA *Assistant Professor (Consumer Affairs), 1967*
B.S., Ouachita University; M.S., Pennsylvania State University.
- THAXTON, G. DONALD *Assistant Professor (Physics), 1966*
B.S., University of Richmond; Ph.D., University of North Carolina.

- THOMASSON, C. LARRY _____ *Associate Professor (Pharmacy)*, 1966
B.S., University of Cincinnati; Ph.D., University of Florida.
- THOMPSON, SIDNEY LEE _____ *Associate Professor (Mathematics)*, 1937, 1948
B.S., Birmingham-Southern College; M.S., Tulane University; M.A., University of Michigan.
- THORNTON, ROBERT W. _____ *Associate Professor (Engineering Graphics)*, 1966
B.S., Ohio State University; M.A., Colorado State University.
- THURLOW, DONALD L. _____ *Associate Professor (Agronomy & Soils)*, 1967
B.S., M.S., Kansas State University; Ph.D., Michigan State University.
- TIMBERLAKE, SAMUEL I. _____ *Assistant Professor (Music)*, 1969
B.A., Auburn University.
- TODD, ELLEN V. _____ *Instructor and Director, Curriculum Laboratory*
(*Learning Resources*), 1968, 1969
B.A., M.L.S., University of Texas.
- TORRI, ROBERT C. _____ *Assistant Professor (Theatre)*, 1969
B.A., Webster College; M.A., University of Denver.
- TOWNSEND, JOHN EDWARD _____ *Assistant Professor (Aerospace Engineering)*, 1967
A.B., M.A., Bob Jones University; M.S., Purdue University.
- TRANSUE, WILLIAM R. R. _____ *Research Assistant Professor (Mathematics)*, 1967, 1968
A.B., Harvard University; Ph.D., University of Georgia.
- TRIMBLE, RICHARD W. _____ *Instructor (Mathematics)*, 1968
B.S., Valparaiso University; M.S., Auburn University.
- TROELSTRUP, RICHARD L. _____ *Instructor (Psychology)*, 1968, 1969
A.A., Riverside City College; B.A., M.A., San Diego State College.
- TRUCKS, LOUIS B. _____ *Assistant Professor (Industrial Engineering)*, 1964
B.S., Auburn University; M.S., University of Pittsburgh.
- TRUELOVE, BRYAN _____ *Associate Professor (Botany & Plant Pathology)*, 1967
B.Sc., Ph.D., University of Sheffield.
- TUCKER, HOWARD F. _____ *Associate Professor (Animal Science)*, 1949, 1962
B.S., M.S., Ph.D., Auburn University.
- TURK, ELIZABETH S. _____ *Serials Librarian*, 1966, 1968
B.A., Tulane University.
- TURK, WILLIAM BROOKE _____ *Assistant Director of Student Health*, 1955
B.S., Auburn University; M.D., Louisiana State University Medical Center.
- TURNER, A. JACK _____ *Associate Professor (Psychology)*, 1956, 1969
B.S., Auburn University; Ph.D., Florida State University.
- TURNER, LOUISE K. _____ *Assistant Professor (Health, Physical Education*
& *Recreation)*, 1937, 1946
B.A., Southwestern Louisiana University; M.A., M.S., Louisiana State University.
- TURNER, D. M. _____ *Associate Professor (Animal Science)*, 1940, 1962
B.S., Auburn University; M.S., University of Illinois.
- UMBACH, ARNOLD W. _____ *Professor (Health, Physical Education &*
Recreation), 1944, 1945
B.S., Southwestern State Teachers College; M.A., Colorado State College of Education.
- VACHON, REGINALD I. _____ *Alumni Professor (Mechanical Engineering)*, 1958, 1963
B.M.E., M.S.N.S., Auburn University; Ph.D., Oklahoma State University; LL.B., Jones Law School.
- VALCOVIC, LAWRENCE R. _____ *Assistant Professor (Zoology & Entomology)*, 1969
B.S., M.S., North Carolina State University.
- VALEN, WILLIAM B. _____ *Assistant Professor (Military Science)*, 1967
B.S., University of Wisconsin; Major, U.S. Army.
- VALLERY, GEORGIA G. _____ *Associate Professor (Psychology)*, 1951, 1969
B.S., M.A., Louisiana State University; M.S., Auburn University.
- VANDEGRIFT, CATHERINE F. _____ *Instructor (Foreign Languages)*, 1967
B.S., Birmingham-Southern College; M.A., Columbia Theological Seminary.
- VANDEGRIFT, FRANK _____ *Director of Cooperative Education*, 1964, 1966
B.M.E., Georgia Institute of Technology; M.A., Columbia Theological Seminary.
- VAN DE MARK, MILDRED S. _____ *Professor (Nutrition & Foods)*, 1948, 1966
B.S., Auburn University; M.S., Columbia University.
- VAN DOREN, KENNETH R. _____ *Instructor (Mathematics)*, 1969
B.A., M.A., University of Texas.
- VANLANDINGHAM, CALVIN L. _____ *Assistant Professor (Agricultural Economics*
& *Rural Sociology)*, 1968
B.A., Millsaps College; M.A., Ph.D., Mississippi State University.
- VANLANDINGHAM, JANICE _____ *Assistant Professor (Sociology)*, 1968
B.S., Western Kentucky University; M.A., Ph.D., Mississippi State University.

- VESTAL, DONALD M., JR. — *Professor and Head (Mechanical Engineering)*, 1959, 1969
B.S.M.E., B.S.E.E., M.S.M.E., Texas A&M University; Ph.D., Stanford University.
- VINSON, JOHNNY B. — *Assistant Band Director and Assistant Professor (Music)*, 1969
B.S., M.Ed., Auburn University.
- VIVES, DONALD LOUIS — *Associate Professor (Chemical Engineering)*, 1953, 1957
B.S., M.S., Columbia University.
- WAKEFORD, KAREN HINSON — *Instructor (Foreign Languages)*, 1969
B.A., Vanderbilt University.
- WALDEN, JOHN C. — *Associate Professor (Educational Administration)*, 1966, 1969
B.A., University of California at Los Angeles; M.A., California State College; Ph.D., Claremont Graduate School.
- WALDROP, HERBERT MARSHALL — *Assistant Professor (Health, Physical Education & Recreation)*, 1960, 1967
B.S., M.S., Auburn University.
- *WALKER, DONALD F. — *Professor (Large Animal Surgery & Medicine)*, 1958, 1966
D.V.M., Colorado State University.
- WALKER, ROBERT P. — *Assistant Professor (Textile Engineering)*, 1968
B.S.T.M., Auburn University; M.S., Institute of Textile Technology.
- WALKIN, JACOB — *Associate Professor (Political Science)*, 1969
A.B., Cornell University; M.A., Yale University; Ph.D., University of California at Berkeley.
- WALL, MINNIE — *Associate Professor and Head of Catalog Division, Library*, 1947, 1965
A.B., Tift College; B.S.L.S., Peabody College; M.Ed., Auburn University.
- WALLS, BILLY G. — *Band Director and Associate Professor (Music)*, 1961, 1965
B.M., Baylor University; M.Mus., Manhattan School of Music; Ph.D., Florida State University.
- WALLS, NANCY MIMS — *Instructor (Art)*, 1967
B.V.A., M.F.A., Auburn University.
- WALTER, JAMES I. — *Assistant Professor (Foundations of Education)*, 1968
B.A., Huntingdon College; B.D., Virginia Episcopal Seminary; M.S., Ed.D., Auburn University.
- WALTERS, KENNETH W. — *Assistant Professor (Philosophy)*, 1964, 1966
B.A., Roosevelt University; M.A., Northwestern University.
- WARRINGTON, THOMAS L. — *Assistant Professor (Foreign Languages)*, 1960, 1962
B.S., Mississippi College; M.A., University of Mississippi.
- WARD, C. H. — *Professor (Chemistry)*, 1957, 1965
B.S., Indiana State Teachers College; M.S., University of Kentucky; Ph.D., Purdue University.
- WARD, CHARLOTTE R. — *Assistant Professor (Physics)*, 1959, 1964
B.S., University of Kentucky; M.S., Ph.D., Purdue University.
- WARNER, JOHN E. — *Associate Professor and Head, Social Science Division, Library*, 1959, 1964
B.S., B.S.L.S., New York State Teachers College; M.A., Ed.D., Columbia University.
- WARREN, W. M. — *Professor and Head (Animal Science), and Acting Head (Dairy Science)*, 1955, 1969
B.S., Michigan State University; M.S., Texas A&M University; Ph.D., University of Missouri.
- WASHINGTON, WILLIAM TAYLOR — *Assistant Professor and Swimming Coach (Health, Physical Education & Recreation)*, 1958, 1969
B.S., M.Ed., Auburn University.
- WATERS, JOHN PATRICK — *Instructor (English)*, 1968
B.A., Auburn University; M.A., University of Florida.
- WATERS, WILLIAM T. — *Professor (Textile Engineering)*, 1958, 1963
B.S.T.E., Clemson University; M.S., Institute of Textile Technology.
- WATKINS, JAMES F. — *Assistant Professor (Educational Administration)*, 1969
B.I.E., Georgia Institute of Technology; M.Ed., Ed.D., Auburn University.
- WATKINS, ROBERT L. — *Instructor (Marketing & Transportation)*, 1969
B.B.A., M.B.A., University of Georgia.
- WATSON, JACK E. — *Assistant Professor (Zoology & Entomology)*, 1965
B.S., Shippensburg State College; M.S., Ph.D., Purdue University.
- WEAR, JOHN I. — *Professor (Agronomy & Soils)*, 1939, 1959
B.S., M.S., Auburn University; Ph.D., Purdue University.
- WEAVER, ANDREW M. — *Professor (Education)*, 1960, 1969
B.S., Tennessee Technological University; M.A., Ed.D., University of Tennessee.
- WEAVER, KENNETH H. — *Assistant Professor (Consumer Affairs)*, 1969
B.A. of Architecture, Auburn University; M.F.A., Cranbrook Academy of Art.

- WEDIN, WINSLOW E. _____ *Instructor (Architecture)*, 1968
B.A., B.Arch., University of Minnesota.
- WEEKS, KARL L. _____ *Assistant Professor (Military Science)*, 1963
Major, U.S. Army.
- WEISSINGER, RAE T. _____ *Instructor (English)*, 1968
B.A., Augustana College; M.A., Auburn University.
- WELSH, BERNARD H. _____ *Instructor (English)*, 1969
B.S., Livingston State University; M.A., Auburn University.
- WERNER, WAYNE E. _____ *Assistant Professor (Counselor Education)*, 1969
B.S., Brockport State Teachers College; M.Ed., Ed.D., University of New York at Buffalo.
- WESTMORELAND, FRANKLIN D. _____ *Assistant Professor (Military Science)*, 1965
B.S., Texas A&M University; Major, U.S. Army.
- WHATLEY, JAMES C., JR. _____ *Instructor (Accounting & Finance)*, 1965
B.A., M.B.A., Auburn University.
- WHEATLEY, WALTER B. _____ *Assistant Professor (Chemistry)*, 1966, 1969
B.S., Birmingham-Southern College; M.T., (ASCP) Lloyd Noland Foundation; M.S., Auburn University.
- WHITE, CHARLES RAYMOND _____ *Associate Professor (Industrial Engineering)*, 1966
B.S.M.E., M.S.I.E., Ph.D., I.E., Purdue University.
- WHITE, MORRIS _____ *Professor (Agricultural Economics & Rural Sociology)*, 1950, 1960
B.S., Auburn University; M.S., Ph.D., Purdue University.
- WHITE, RONALD _____ *Research Associate (Electrical Engineering)*, 1969
B.E.E., M.S.E.E., Auburn University.
- WHITE, VIRGINIA C. _____ *Associate Professor (Foods & Nutrition)*, 1954, 1966
B.S., University of Montevallo; M.S., University of Tennessee.
- WHITTEN, DAVID O. _____ *Assistant Professor (Economics & Geography)*, 1968
B.S., College of Charleston; M.A., University of South Carolina; Ph.D., Tulane University.
- WIGGINS, AGEE M. _____ *Professor (Large Animal Surgery & Medicine)*, 1946, 1959
D.V.M., Auburn University; M.S., Kansas State University.
- WIGGINS, EARL L. _____ *Associate Professor (Animal Science)*, 1956
B.S., M.S., Oklahoma State University; Ph.D., University of Wisconsin.
- WIGGINS, LORNA A. _____ *Assistant Professor and Head, Acquisitions Division, Library*, 1968
B.A., Agnes Scott College; M.L.S., Emory University.
- WILBANKS, MARY E. _____ *Assistant Professor and Special Collections Librarian, Library*, 1959, 1962
A.B., University of Montevallo; M.A., Emory University; M.S.L.S., University of North Carolina.
- WILCOX, ROY C. _____ *Associate Professor (Mechanical Engineering)*, 1969
B.S., M.S., Virginia Polytechnic Institute; Ph.D., University of Missouri.
- WILDER, VIRGINIA V. _____ *Assistant Professor (Elementary Education)*, 1966
B.S., M.Ed., University of Georgia.
- WILKEN, LEON O., JR. _____ *Associate Professor (Pharmacy)*, 1963
B.S., Loyola University; M.S., Ph.D., University of Texas.
- WILLARD, JULIA L. _____ *Instructor (Elementary Education)*, 1968
B.A., B.S., Jacksonville University; M.Ed., Auburn University.
- WILLERS, JACK C. _____ *Professor and Head (Foundations of Education)*, 1967
B.A., M.A., Baylor University; B.D., Southwestern Theological Seminary; Ph.D., University of Texas.
- WILLIAMS, BYRON B., JR. _____ *Professor (Pharmacy)*, 1951, 1962
B.S., M.S., Ph.D., University of Florida.
- WILLIAMS, ELIZABETH GRIMES _____ *Assistant Professor (Accounting & Finance)*, 1946, 1959
B.S., M.S., Auburn University.
- WILLIAMS, ERNEST _____ *Professor (Mathematics)*, 1934, 1948
B.S., Birmingham-Southern College; M.S., Auburn University; Ph.D., University of Michigan.
- WILLIAMS, HUGH O. _____ *Professor (Art)*, 1957, 1959
B.A.A., Auburn University; M.F.A., A.E.D., Columbia University.
- WILLIAMS, JAN B. _____ *Instructor (English)*, 1969
B.A., M.A., University of Texas.
- WILLIAMS, JERRY F. _____ *Instructor (Mathematics)*, 1969
B.S., M.S., Auburn University.
- WILLIAMS, NICK O. _____ *Instructor (Mathematics)*, 1968
B.A., M.A., University of Texas.

- WILLIAMSON, EDWARD C. Associate Professor (History), 1957, 1963
A.B., M.A., University of Florida; Ph.D., University of Pennsylvania.
- WILLIS, BENJAMIN L. Assistant Professor (Military Science), 1967
B.S., United States Military Academy; Major, U.S. Army.
- WILSON, JANE A. Assistant Professor (Zoology-Entomology), 1968
B.S., Limestone College; M.S., Ph.D., Clemson University.
- WILSON, LOWELL E. Professor (Agricultural Economics & Rural Sociology), 1960, 1968
B.S., Murray State University; M.S., University of Kentucky; Ph.D., University of Illinois.
- WILT, GERALD R. Assistant Professor (Microbiology), 1962, 1965
B.S., Western Kentucky State University; M.S., Clemson University.
- WINGARD, JOHN W. Assistant Professor (Industrial Laboratories), 1957, 1962
B.S., M.S., Auburn University.
- WINGARD, R. E. Professor (Chemical Engineering), 1932, 1969
B.S., M.S., Auburn University.
- WINKLER, JOHN K. Associate Professor (Large Animal Surgery & Medicine), 1962, 1963
D.V.M., Colorado State University.
- WOLVERTON, CLYDE Instructor (Foreign Languages), 1966
B.A., University of Akron.
- WOODALL, JAMES R. Professor (English), 1952, 1965
B.S., Murray State University; M.A., University of Kentucky; Ph.D., Vanderbilt University.
- WOODFIN, ROBERT JOSEPH Instructor (Economics & Geography), 1967
B.S.B.A., M.B.A., Auburn University.
- WOODWARD, CAMILLE M. Instructor (Accounting & Finance), 1969
B.A., Huntingdon College; M.B.A., Auburn University.
- WRIGHT, JAMES S. Instructor (Physiology & Pharmacology), 1967
B.S., M.S., Clemson University.
- WRIGHT, JONE P. Assistant Professor (Elementary Education), 1968
B.S., M.Ed., University of Georgia; Ph.D., University of Alabama.
- WRIGHT, THOMAS L. Associate Professor (English), 1960, 1964
B.A., M.A., Ph.D., Tulane University.
- YARBROUGH, MILTON E., JR. Assistant Professor (Naval Science), 1968
B.S., U.S. Naval Academy; Lieutenant, U.S. Navy.
- YEAGER, JOSEPH H. Professor and Head (Agricultural Economics & Rural Sociology), 1946, 1969
B.S., M.S., Auburn University; Ph.D., Purdue University.
- YIELDING, KATRINA Assistant Professor (Secondary Education), 1965, 1967
B.S., M.S., Ed.D., Auburn University.
- YOUNG, LUTHER M. Associate Professor (Health, Physical Education & Recreation), 1944, 1959
B.S., M.S., Auburn University.
- YOUNG, WILLIAM THOMAS Professor and Head (Art), 1969
B.F.A., M.A., University of Alabama.
- YU, JAMES C. M. Assistant Professor (Mechanical Engineering), 1967
B.S., National Taiwan University; M.S., Virginia Polytechnic Institute; Ph.D., Auburn University.
- YU, MARIA TE-YUNG SHEN Instructor (Nutrition & Foods), 1967
M.S., Auburn University.
- ZENOR, PHILLIP L. Assistant Professor (Mathematics), 1968
B.S., M.S., Ph.D., University of Houston.
- ZIEGLER, PAUL F. Associate Professor (Chemistry), 1949, 1958
B.S., Otterbein College; M.S., Ph.D., University of Cincinnati.

EMERITI

- ALLEN, ROGER W. Dean Emeritus of the School of Science and Literature, June, 1967
B.S., M.S., Auburn University; M.S., University of Michigan; Ph.D., Columbia University.
- ALLISON, FRED Professor Emeritus of Physics, March, 1961
A.B., Emory and Henry College; M.A., Ph.D., University of Virginia; D.Sc., Auburn University; LL.D., Emory and Henry College.
- ALVORD, BEN FINLEY Professor Emeritus of Research Data Analysis, June, 1966
B.S., M.S., University of Illinois.
- APPLEBEE, FRANK W. Head Professor Emeritus, Art, August, 1969
Diploma, Massachusetts College of Art; B.S., M. App. Art, Auburn University.

- ATKINSON, T. P. _____ *Professor Emeritus of Foreign Languages, March, 1961*
Ph.B., A.B., Lebanon University; M.A., University of Georgia.
- BASORE, CLEBURNE A. _____ *Professor, Emeritus of Chemical Engineering, June, 1963*
B.S., M.S., Auburn University; M.A., University of Michigan; Ph.D., Columbia University.
- BURKHART, E. WALTER _____ *Professor Emeritus of Architecture, June, 1964*
B.S., Arch., Washington State University; M.S., Arch., Columbia University.
- CARLOVITZ, GILES H. _____ *Professor Emeritus, Electrical Engineering, June, 1965*
B.S., M.S.E.E., Auburn University.
- COPPEDGE, WILLIAM HOUSTON _____ *Associate Professor Emeritus, Industrial Engineering, June, 1966*
B.S., Oklahoma State University; M.S., Auburn University.
- EATON, W. H. _____ *Associate Professor Emeritus, Dairy Husbandry, March, 1961*
B.S., North Carolina State University.
- EDWARDS, CHARLES WESLEY _____ *Registrar Emeritus, June, 1966*
B.S., Auburn University; M.A., Harvard University.
- ELIZONDO, YNDALECIO ANDRES _____ *Associate Professor Emeritus, Mechanical Engineering, June, 1966*
B.S.C.E., B.S.M.E., M.S., Auburn University.
- GOSSER, LEO G. _____ *Professor Emeritus, English, June, 1967*
B.S., Kirksville State College; Ph.D., University of Chicago.
- GRIMES, J. C. _____ *Professor Emeritus, Animal Husbandry and Nutrition, March, 1961*
B.S., University of Tennessee; M.S., University of Kentucky.
- GUYTON, FAYE E. _____ *Professor Emeritus, Zoology-Entomology, June, 1963*
B.S., M.S., Ohio State University.
- HEATH, MCKENZIE _____ *Professor Emeritus, Small Animal Surgery and Medicine, July, 1968*
D.V.M., Auburn University.
- HUNTLEY, MICHEL C. _____ *Dean Emeritus, Faculties, July, 1968*
B.A., Millsaps College; M.A., Emory University; LL.D., Millsaps College; Litt.D., University of Miami.
- HUTSELL, WILBUR HALL _____ *Professor Emeritus, Athletic Department, June, 1963*
A.B., University of Missouri.
- ISBELL, C. L. _____ *Professor Emeritus, Horticulture, March, 1961*
B.S., Auburn University; M.S., Ph.D., Michigan State University.
- IVEY, OLIVER T. _____ *Professor Emeritus, History, August, 1969*
B.S., M.S., Auburn University; M.A., University of Chicago.
- JOHNSON, SIDNEY W. _____ *Associate Professor Emeritus, Political Science, March, 1970*
B.S., M.S., Auburn University.
- JONES, DAN T. _____ *Professor Emeritus, Industrial Laboratories, June, 1961*
Diploma, Auburn University.
- KUDERNA, JEROME _____ *Professor Emeritus, Education, June, 1962*
B.S., M.A., Michigan State University.
- MOORE, JOHN RICHARD _____ *Professor Emeritus, English, 1964*
A.B., Tulane University; A.M., Ph.D., Harvard University.
- MOORE, OMAR C. _____ *Associate Professor Emeritus, Chemical Engineering, September, 1969*
B.S., M.S., Auburn University.
- PITTS, JOHN E. _____ *Associate Professor Emeritus, Mathematics, March, 1961*
B.S., E.E., Auburn University.
- PRICE, EDWIN O. _____ *Professor Emeritus, Chemistry, December, 1969*
A.B., University of Colorado; M.S., Ph.D., Ohio State University.
- PUMPHREY, FRED H. _____ *Dean Emeritus, Engineering, June, 1969*
B.S., B.E.E., E.E., D.Sc. (hon.), Ohio State University.
- REYNOLDS, ALFRED WADE _____ *Head Professor Emeritus, History and Political Science, June, 1964*
B.S., M.S., Auburn University; M.A., Ph.D., University of California.
- RITCHIE, VIRGINIA CORBIN _____ *Associate Professor Emeritus, Home Economics, June, 1966*
B.S., M.S., University of Kentucky.
- ROBINSON, A. JUDE _____ *Associate Professor Emeritus, Mathematics, June, 1967*
B.S., Clemson University; M.A., Emory University.
- ROY, KENNETH B. _____ *Editor Emeritus of Department, Publications, July, 1968*
B.J., University of Missouri.
- SAHAG, L. M. _____ *Professor Emeritus, Engineering Graphics, March, 1961*
B.S., University of North Carolina; M.S., Auburn University.

- SAUNDERS, CHARLES RICHARD.....*Dean Emeritus, School of Chemistry, July, 1968*
B.S., M.S., Auburn University; Ph.D., University of Nebraska.
- SEAL, JAMES LEWIS.....*Professor Emeritus, Botany, June, 1963*
B.S.Ag., Clemson University; M.S., Iowa State University; Ph.D., University of Minnesota.
- SPANN, RANSOM D.....*Professor Emeritus, Electrical Engineering, June, 1964*
B.S.E.E., E.E., Auburn University.
- SPIDLE, MARION WALKER.....*Dean Emeritus, School of Home Economics, June, 1966*
B.S., Alabama College; B.S., M.A., Columbia University.
- STURKIE, D. G.....*Professor Emeritus, Agronomy and Soils, July, 1968*
B.S., Auburn University; M.S., Iowa State University; Ph.D., Michigan State University.
- WARD, BENJAMIN P.....*Associate Professor Emeritus, Mechanical Engineering, July, 1968*
B.S., U.S. Naval Academy; M.S.M.E., Columbia University.
- WARE, LAMAR MIMS.....*Head Professor Emeritus, Horticulture, June, 1966*
B.S., M.S., Auburn University.
- WHITE, RAYMOND H.....*Professor Emeritus, Education, April, 1965*
B.S., Southwest Missouri State College; A.B., Drury College; A.M., University of Chicago; Ed.D., Columbia University.

ADMINISTRATIVE STAFF

- BALL, JOHN COOPER, JR. _____ *Director of Nonacademic Personnel,
Business Office, 1967*
B.S.M.E., Auburn University.
- BARROW, WILLIAM OWENS _____ *Senior Counselor, Student Counseling
Service, 1948, 1951*
A.B., Birmingham-Southern College; M.A., Peabody College.
- BEAR, ROBERT J. _____ *Comptroller and Assistant Treasurer, Business Office, 1961*
B.S., Cornell University; M.B.A., George Washington University.
- BECK, BURTON C. _____ *Coordinator of Counseling, Student Counseling, 1968*
B.S., Troy State University; M.Ed., Auburn University.
- BECKWITH, WILLIAM H. _____ *Director of Sports Public Relations, 1951, 1958*
B.S., Auburn University.
- BOWMAN, JOSEPH R. _____ *Construction Engineer, Buildings and Grounds, 1945*
- BRACKIN, GLENN _____ *Television Operation Manager, Educational
Television, 1960, 1968*
- BRADBERRY, GEORGE L. _____ *Associate Secretary, Alumni Association, 1951, 1966*
B.S., University of Georgia.
- BURGESS, JOHN ROBERT _____ *Purchasing Agent, Business Office, 1966*
- CALHOUN, GUSSIE R. _____ *Assistant to the Dean of Women, 1963*
B.A., M.A., Louisiana Polytechnic Institute.
- CARGILE, TRUDY _____ *Editor, University News Bureau, University Relations, 1962*
- COOK, CLARENCE E. _____ *Director of Auburn Union, 1960*
B.A., M.A., Birmingham-Southern College.
- COOK, JERRY T. _____ *Director, Magnolia Dormitories, 1968*
B.S., Auburn University.
- DAVIDSON, WILLIAM M., JR. _____ *Sports Editor, Auburn Athletic Department, 1964*
B.S., Auburn University.
- DAWSON, MILLARD E. _____ *Chief Security Officer, Buildings and Grounds, 1951*
- FLEMING, REUBEN W. _____ *Manager, Programming, Educational Services, 1967*
- FLOURNEY, GEORGE B. _____ *Resident Manager, Sewell Hall, 1963*
B.S., Auburn University.
- FOSTER, GEORGE C. _____ *Assistant to the Dean, School of Arts and Sciences, 1952*
B.S., Auburn University.
- FRANKLIN, JAMES L. _____ *Manager, EDP Operations, Computer Center, 1966*
- GOGGANS, MALLETTE P. _____ *Assistant to the Dean, Home Economics, 1966*
B.S., University of Georgia; M.H.E., Auburn University.
- GRAVES, MILTON L., JR. _____ *Administrative Assistant, Buildings and
Grounds, 1962, 1964*
B.S.I.M., Auburn University.
- HANEY, PATTIE _____ *Administrative Assistant, Alumni Office, 1934, 1963*
- HENRY, PAUL W. _____ *Director of Auxiliary Enterprises, 1954, 1965*
- HOCKMAN, WARREN D. _____ *Administrative Assistant to Dean, School of
Architecture and Fine Arts, 1969*
- HOWARD, MILFORD K. _____ *Trainer, Athletics, 1948*
B.S., Auburn University.
- HULING, CHARLES H. _____ *Internal Auditor, Business Office, 1968*
B.S., Auburn University.
- JENKINS, FRANK W. _____ *Counselor III, Vocational Rehabilitation Service, 1949, 1962*
A.B., Emory University; M.Ed., Auburn University.
- JONES, DILLARD F. _____ *Administrative Assistant (Learning Resources
Center), 1966, 1969*
B.S., Auburn University.

- JONES, HANIEL..... *Assistant to Dean of Engineering*, 1958, 1964
B.A., Millsaps College; B.D., Duke University; B.C.E., Auburn University.
- JONES, WILLIAM L..... *Supervisor, Duplicating Service*, 1949, 1959
- JORDAN, EVELYN WALKER..... *Assistant to Dean of Women*, 1964, 1969
B.A., University of South Carolina; M.A., Auburn University.
- KING, LESTER C..... *Supervisor of Photographic Services*, 1949, 1962
- KIRKWOOD, ALICE P..... *Administrative Assistant and Payroll Accountant,*
Business Office, 1951, 1968
B.S., Auburn University.
- KLASE, NORMAN N..... *Senior Personnel Assistant, University Personnel*, 1966, 1968
- KNAPP, BYRON S., M.D..... *Assistant Director of Student Health*, 1961
B.S., M.D., Wayne State University.
- LANGHAM, JEAN E..... *Superintendent of Nurses*, 1968, 1969
R.N., Methodist Hospital.
- LEARY, BARBARA K..... *Personnel Assistant, Personnel Office*, 1969
B.A., College of St. Teresa.
- LEDBETTER, LOWELL..... *Activities and Foreign Students Adviser*, 1964, 1966
B.S., Auburn University; B.D., New Orleans Theological Seminary.
- LOVVORN, KAYE F..... *Editor of The Alumnews*, 1965, 1966
B.A., Auburn University.
- MAINS, CHARLES..... *Data Processing Accountant, Business Office*, 1965
B.S., Kent State University.
- MCCARTY, MARY L..... *Administrative Secretary and Secretary to*
Board of Trustees, President's Office, 1961, 1966
- MCGOWEN, DRUSILLA BOONE..... *Assistant Editor, News Bureau,*
University Relations, 1962
- MIMS, WILLIAM HENRY..... *Superintendent of Maintenance and*
Operations, Buildings and Grounds, 1964
B.S., Auburn University.
- MULLINS, MARION DEWITT..... *Administrative Assistant, Chemistry*
Department, 1952, 1968
B.S., Auburn University.
- NOLAN, JAMES A..... *Assistant to the Dean, School of Business*, 1969
B.S., Bridgewater State College; Ed.D., Boston University.
- O'BRIEN, JAMES F., JR..... *Assistant Director, Engineering Extension*
Service, 1957, 1967
B.M.E., M.M.E., Auburn University.
- PARKER, JAMES C..... *Assistant Director, Admissions Office*, 1968
A.B., University of Alabama; M.A., Auburn University.
- PEAK, WILLIAM F..... *Mechanical Engineer, Buildings and Grounds*, 1964
B.S.I.M., M.S.M.E., Auburn University.
- PHILLIPS, ERNEST A..... *Bursar, Business Office*, 1964, 1967
- POWELL, MRS. CINDERELLA C..... *Supervisor of Women's Dormitories,*
Dean of Women's Staff, 1947
- REEVES, FRANK..... *Housing Manager, Caroline Draughton Village*, 1968
B.S., Auburn University.
- RICHARD, SEPTIME S., JR..... *Administrative Assistant to Dean, School*
of Business, 1969
- RILEY, RHETT E..... *Chief Accountant, Business Office*, 1963, 1968
B.S., Auburn University.
- ROBERTS, CHARLES B..... *Assistant Director, Student Financial Aid*, 1968
B.S., Auburn University.
- RODEN, REBECCA H..... *Graduate School Registrar, Graduate School*, 1956, 1968
B.S., Auburn University.
- RUSH, KATHRYN S..... *Food Director, Dining Hall Service*, 1949, 1951
B.S., M.S., Auburn University.

- SCARBOROUGH, PEGGY G. *Budget Clerk, Business Office, 1967, 1968*
- OSTERVOLD, JUDY *Supervisor, Stenographic Services, 1969*
- SIMMONS, ELDRIDGE S., M.D. *Assistant Director of Student Health, 1960*
B.S., M.D., University of Virginia.
- SIMS, BENNETT *Store Manager, University Bookstore, 1946, 1947*
- SUGG, ETHEL J. *Head of Women's Housing, 1957, 1968*
B.S., M.E., Auburn University.
- SUGG, WILLIAM C. *Assistant to Dean, Pharmacy,
and Director of Pharmacy Extension, 1966*
B.S., Auburn University.
- SWEENEY, JOSEPH W. *Coordinator of Mental Health, Student Counseling, 1968*
A.S.T.P., University of Idaho; B.A., St. Johns University; M.Ed., Auburn University.
- TAYLOR, EDWARD B. *Adviser to Fraternities, Student Affairs, 1957, 1967*
B.S., Davidson College; B.S., North Carolina State University; M.A., Columbia University;
Ph.D., University of Nebraska.
- THOMAS, DOROTHY ELIZABETH *Assistant to the Dean of Women, 1969*
B.S., Auburn University; M.S., Florida State University.
- TIPPINS, FRANCIS E. *Financial Assistant, Agriculture Administration, 1929, 1966*
- WARE, ROBERT E. *Chief Engineer, Educational Television, 1959, 1968*
B.S., Auburn University.
- WALDROP, RUTH C. *Assistant Purchasing Agent, Business Office, 1928, 1937*
- WALKER, JOE MARTIN *Administrative Assistant to Dean of Engineering, 1966*
- WILLIAMS, DUDLEY O. *Television Program Director, Educational
Television, 1966, 1968*
B.A., University of Kentucky.
- WILLIAMS, L. B. *Editor, University Publications, University Relations, 1956, 1962*
B.S., Troy State University; M.S., Peabody College.
- WINGATE, HENRY T. *Assistant to the Dean, Veterinary Medicine, 1927, 1959*
B.S., Auburn University.
- WOLKE, GERARD G. *Assistant to the Dean, School of Education, 1968*
B.S., Creighton University; M.A., Georgetown University.
- *WRIGHT, LUNEL D., R.N. *Superintendent of Nurses, Drake Infirmary, 1941, 1950*

*On leave.

AGRICULTURAL EXPERIMENT STATION STAFF¹

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., *President*
 W. S. BAILEY, D.V.M., M.S., Sc.D., *Vice President for Academic & Administrative Affairs*
 BEN T. LANHAM, JR., B.S., M.S., Ph.D., *Vice President for Research*
 EDWIN V. SMITH, B.S., M.S., Ph.D., *Director*
 R. D. ROUSE, B.S., M.S., Ph.D., *Associate Director*
 C. F. SIMMONS, B.S., M.S., Ph.D., *Assistant Director*
 TOM E. CORLEY, B.S., M.S., *Assistant Director for Outlying Units*
 FRANCES E. TIPPINS, *Financial Assistant*

Agricultural Economics and Rural Sociology

YEAGER, J. H. *Professor and Head of Department, 1946, 1964*
 B.S., M.S., Auburn University; Ph.D., Purdue University.
 BLACKSTONE, J. H. *Professor, 1938, 1953*
 B.S., M.S., Auburn University
 DANNER, M. J. *Professor, 1943, 1957*
 B.S., Texas Technological College; M.S., University of Tennessee.
 WHITE, MORRIS *Professor, 1950, 1960*
 B.S., Auburn University; M.S., Ph.D., Purdue University.
 WILSON, L. E. *Professor, 1960, 1968*
 B.S., Murray State University; M.S., University of Kentucky; Ph.D., University of Illinois.
 BELL, S. C. *Associate Professor, 1956, 1965*
 B.S., M.S., Auburn University; Ph.D., Michigan State University.
 DUNKELBERGER, J. E. *Associate Professor, 1962, 1967*
 A.B., Franklin and Marshall College; M.S., Pennsylvania State University; Ph.D., Mississippi State University.
 STALLINGS, JAMES L. *Associate Professor, 1969*
 B.S., M.S., Purdue University; Ph.D., Michigan State University.
 CLONTS, HOWARD A., JR. *Assistant Professor, 1962, 1968*
 B.S., M.S., Auburn University; Ph.D., Virginia Polytechnic Institute.
 MCCOY, EDWARD W. *Assistant Professor, 1967*
 B.S., M.S., University of Nevada; Ph.D., University of Tennessee.
 VANLANDINGHAM, CALVIN L. *Assistant Professor, 1968*
 B.A., Millsaps College; M.A., Ph.D., Mississippi State University.
 DRISCOLL, L. S. *Instructor, 1965*
 B.S., M.S., Auburn University.
 HAMMETT, RUTH A. *Research Associate, 1955*
 B.S., M.S., Auburn University.

Agricultural Engineering

KUMMER, F. A. *Professor and Head of Department, 1935, 1948*
 B.S., M.S., Auburn University.
 BUSCH, CHARLES D. *Associate Professor, 1969*
 B.S., Cornell University; M.S., Utah State University; Ph.D., Cornell University.
 DUMAS, W. T. *Associate Professor, 1946, 1962*
 B.S., M.S., Auburn University.
 RENOLL, E. S. *Associate Professor, 1949, 1958*
 B.S., Auburn University; M.S., Iowa State University.
 ROLLO, C. A. *Associate Professor, 1947, 1956*
 B.S., M.S., Auburn University.
 STORES, C. M. *Associate Professor, 1937, 1947*
 B.S., M.S., Auburn University.
 HERMANSON, RONALD E. *Assistant Professor, 1966*
 B.S., M.S., Ph.D., Iowa State University.
 LALOR, W. F. *Assistant Professor, 1968*
 B. Agr. Sc., University College (Dublin); M.S., Michigan State University; Ph.D., Iowa State University.

¹As of January 1, 1970.

- KOON, JOE L. Assistant Professor, 1967, 1968
B.S., M.S., Ph.D., Auburn University.
- ROCHESTER, E. W., JR. Assistant Professor, 1970
B.S., Clemson University; M.S., North Carolina State University.
- COLLINS, ELDRIDGE Research Associate, 1969
B.S., Auburn University.
- EAGAR, T. N. Research Associate, 1959
B.S., Auburn University.
- SMITH, D. M. Field Superintendent, 1962
B.S., Auburn University.
- COOPER, A. W. Director, National Tillage Machinery Laboratory
(Coop. USDA), 1939, 1958
B.S., M.S., Auburn University; Ph.D., Michigan State University.
- BAILEY, A. C. Agricultural Engineer (Coop. USDA), 1965
B.S., Michigan State University; M.S., University of Illinois; Ph.D., Auburn University.
- BROWNING, VIRGIL D. Agricultural Engineer (Coop. USDA), 1966, 1969
B.S., Auburn University.
- BURT, EDDIE C. Agricultural Engineer (Coop. USDA), 1968
B.S., University of Georgia.
- CHAPPELL, THOMAS W. Agricultural Engineer (Coop. USDA), 1967
B.S., M.S., Virginia Polytechnic Institute.
- GILL, W. R. Soil Scientist (Coop. USDA), 1955
B.S., Pennsylvania State University; M.S., University of Hawaii; Ph.D., Cornell University.
- HENDRICK, J. G. Agricultural Engineer (Coop. USDA), 1962, 1968
B.S., M.S., Auburn University; Ph.D., Michigan State University.
- PRATHER, O. C. Electronic Engineer (Coop. USDA), 1965
B.S., M.S., Auburn University.
- RAMP, RUSSELL M. Agricultural Engineer (Coop. USDA), 1969
B.S., University of Illinois; B.E.E., B.M.E., University of Delaware.
- REAVES, C. A. Agricultural Engineer (Coop. USDA), 1951
B.S., Auburn University; M.S., University of Missouri; Ph.D., Auburn University.
- SCHAFER, R. L. Agricultural Engineer (Coop. USDA), 1964
B.S., M.S., Ph.D., Iowa State University.
- SMITH, LOWREY Agricultural Engineer (Coop. USDA), 1969
B.S., M.S., Mississippi State University.
- TAYLOR, HEYWARD T., JR. Civil Engineer (Coop. USDA), 1961
B.C.E., Auburn University.
- TAYLOR, J. H. Agricultural Engineer (Coop. USDA), 1962, 1964
B.S., Mississippi State University; Ph.D., Auburn University.
- TROUSE, A. C., JR. Soil Scientist (Coop. USDA), 1964
B.S., M.S., University of California; Ph.D., University of Hawaii.

Agronomy and Soils

- ENSMINGER, L. E. Professor and Head of Department, 1944, 1966
B.S., University of Missouri; Ph.D., University of Illinois.
- ADAMS, FRED Professor, 1955, 1965
B.S., M.S., Louisiana State University; Ph.D., University of California.
- COPE, J. T., JR. Professor, 1950, 1959
B.S., M.S., Auburn University; Ph.D., Cornell University.
- DONNELLY, E. D. Professor, 1946, 1959
B.S., M.S., Auburn University; Ph.D., Cornell University.
- HILTBOLD, A. E. Professor, 1955, 1968
B.S., Cornell University; M.S., Iowa State University; Ph.D., Cornell University.
- HOVELAND, CARL S. Professor, 1959, 1968
B.S., M.S., University of Wisconsin; Ph.D., University of Florida.
- JOHNSON, WILEY C., JR. Professor, 1957, 1969
B.S., Wake Forest College; B.S., M.S., North Carolina State University; Ph.D., Cornell University.
- ROGERS, HOWARD T. Professor, 1942, 1966
B.S., Virginia Polytechnic Institute; M.S., Michigan State University; Ph.D., Iowa State University.

- SCARSBROOK, CLARENCE E. _____ Professor, 1953, 1959
B.S., Auburn University; Ph.D., North Carolina State University.
- WEAR, J. I. _____ Professor, 1939, 1959
B.S., M.S., Auburn University; Ph.D., Purdue University.
- EVANS, E. M. _____ Associate Professor, 1949, 1953
B.S., Auburn University; M.S., Cornell University.
- THURLOW, DONALD L. _____ Associate Professor, 1967
B.S., M.S., Kansas State University; Ph.D., Michigan State University.
- KING, C. C., JR. _____ Associate Professor, 1952, 1969
B.S., M.S., Auburn University; Ph.D., North Carolina State University.
- BENNETT, ALLISON C. _____ Assistant Professor, 1969
B.S., M.S., Oklahoma State University; Ph.D., Auburn University.
- BERRY, CHARLES D. _____ Assistant Professor, 1968
B.S., Texas A&M University; M.S., Ph.D., Purdue University.
- BUCHANAN, GALE A. _____ Assistant Professor, 1965
B.S., M.S., University of Florida; Ph.D., Iowa State University.
- DICKENS, RAY _____ Assistant Professor, 1968
B.S., University of Arkansas; M.S., Ph.D., Auburn University.
- EVANS, C. E. _____ Assistant Professor, 1955, 1957
B.S., Abilene Christian College; M.S., Auburn University; Ph.D., North Carolina State University.
- HAJEK, B. F. _____ Assistant Professor, 1968
B.S., Texas A&M University; M.S., Ph.D., Auburn University.
- SHARMAN, G. T., JR. _____ Assistant Professor (Thorsby), 1952, 1954
B.S., Auburn University.
- LANGFORD, J. W. _____ Superintendent, Plant Breeding Unit (Tallassee), 1954
B.S., Auburn University.
- EASON, JOHN T. _____ Research Associate, 1966
B.S., M.S., Auburn University.
- HARTZOG, DALLAS _____ Research Associate, 1969
B.S., M.S., Auburn University.
- FISCUS, EDWIN L. _____ Research Associate, 1969
B.S., Slippery Rock State College; M.S., University of Arizona; Ph.D., Duke University.
- MCCORMICK, ROBERT F., JR. _____ Research Associate, 1966
B.S., Mississippi State University.
- PARKS, JOHN P. _____ Research Associate, 1968
B.S., University of Georgia.
- RICHBURG, JOHN S. _____ Research Associate, 1969
B.S., M.S., Auburn University.
- SIMMONS, GERALD W. _____ Research Associate, 1968
B.S., Tennessee Technological University.
- TEEM, DAVID H. _____ Research Associate, 1967
B.S., Auburn University.
- DOSS, B. D. _____ Soil Scientist (Coop. USDA), (Thorsby), 1956
B.S., Auburn University.
- HUCK, MORRIS G. _____ Soil Scientist (Coop. USDA), 1967
B.S., M.S., University of Illinois; Ph.D., Michigan State University.
- KAPPELMAN, A. J., JR. _____ Research Pathologist (Coop. USDA), 1965
B.S., Iowa State University; M.S., University of Nebraska; Ph.D., North Carolina State University.
- LUND, ZANE F. _____ Soil Scientist (Coop. USDA), 1962
B.S., M.S., Auburn University.
- LOWRY, F. E. _____ Soil Scientist (Coop. USDA), 1967
B.S., University of Nebraska; M.S., Kansas State University.
- MIXON, AUBREY C. _____ Research Agronomist (Coop. USDA), 1957
B.S., University of Georgia; M.S., North Carolina State University; Ph.D., Auburn University.
- PEARSON, R. W. _____ Soil Scientist (Coop. USDA), 1941, 1960
B.S., M.S., Mississippi State University; Ph.D., University of Wisconsin.
- SHEPHERD, RAYMOND L. _____ Research Agronomist (Coop. USDA), 1965
B.S., Ouachita Baptist College; M.S., University of Arkansas; Ph.D., Auburn University.
- TAYLOR, HOWARD M. _____ Soil Scientist (Coop. USDA), 1965
B.S., Texas Technological College; Ph.D., University of California.

Animal Health Research

KING, NELSON B. _____ *Coordinator, 1967*
B.S., D.V.M., M.S., Ph.D., Ohio State University.

Animal Science

WARREN, W. M. _____ *Professor and Head of Department, 1955, 1957*
B.S., Michigan State University; M.S., Texas A&M University; Ph.D., University of Missouri.

ANTHONY, W. B. _____ *Professor, 1953, 1955*
B.S., University of Illinois; M.S., Texas A&M University; Ph.D., Cornell University.

PATTERSON, TROY B. _____ *Professor, 1957, 1965*
B.S., Mississippi State University; M.S., Ph.D., Texas A&M University.

SMITH, R. C. _____ *Alumni Professor, 1961, 1969*
B.S., Elmhurst College; M.S., Ph.D., University of Illinois College of Medicine.

STRENGTH, D. R. _____ *Alumni Professor, 1961, 1967*
B.S., M.S., Auburn University; Ph.D., Cornell University.

HARRIS, RALPH R. _____ *Associate Professor, 1960, 1963*
B.S., M.S., Auburn University; Ph.D., Texas A&M University.

HUFFMAN, DALE L. _____ *Associate Professor, 1963, 1965*
B.S., Cornell University; M.S., Ph.D., University of Florida.

PARKS, PAUL F. _____ *Associate Professor and Assistant
Dean of Graduate School, 1956, 1968*
B.S., M.S., Auburn University; Ph.D., Texas A&M University.

SHIELDS, ROBERT P. _____ *Associate Professor, 1966, 1969*
D.V.M., M.S., Auburn University; M.S., University of Arkansas.

SQUIERS, C. D. _____ *Associate Professor, 1950*
B.S., M.A., Ph.D., University of Missouri.

TUCKER, H. F. _____ *Associate Professor, 1949, 1962*
B.S., M.S., Ph.D., Auburn University.

TURNER, D. M. _____ *Associate Professor, 1940, 1962*
B.S., Auburn University; M.S., University of Illinois.

WIGGINS, E. L. _____ *Associate Professor, 1956*
B.S., M.S., Oklahoma State University; Ph.D., University of Wisconsin.

DARON, HARLOW H. _____ *Assistant Professor, 1967*
B.S., University of Oklahoma; Ph.D., University of Illinois.

MEADOWS, G. B. _____ *Assistant Professor, 1951*
B.S., Auburn University; M.S., University of Florida.

RUFFIN, B. G. _____ *Assistant Professor, 1967, 1969*
B.S., M.S., Mississippi State University; Ph.D., Auburn University.

COLLINS, JAMES C. _____ *Instructor, 1965*
B.S., M.S., Mississippi State University.

CUNNINGHAM, JOHN P. _____ *Research Associate, 1958, 1965*
B.S., M.S., Auburn University.

POWELL, W. E. _____ *Research Associate, 1969*
B.S., Auburn University.

LOWRIE, PATRICIA M. _____ *Research Associate, 1969*
B.S., M.S., Howard University.

Botany and Plant Pathology

LYLE, J. A. _____ *Professor & Head of Department, 1947, 1954*
B.S., University of Kentucky; M.S., North Carolina State University; Ph.D., University of Minnesota.

CURL, E. A. _____ *Professor, 1954, 1967*
B.S., Louisiana Polytechnic Institute; M.S., University of Arkansas; Ph.D., University of Illinois.

DAVIS, D. E. _____ *Alumni Professor, 1947, 1968*
B.Ed., Ped.D., Eastern Illinois University; M.S., Ph.D., Ohio State University.

DAVIS, NORMAN D. _____ *Professor, 1958, 1967*
B.S., University of Georgia; M.S., Ph.D., Ohio State University.

- DIENER, URBAN L. *Professor, 1952, 1963*
B.A., Miami University (Ohio); M.A., Harvard University; Ph.D., North Carolina State University.
- GUDAUSKAS, ROBERT T. *Professor, 1960, 1969*
B.S., Eastern Illinois State University; M.S., Ph.D., University of Illinois.
- CLARK, E. M. *Associate Professor, 1956, 1960*
B.S., M.S., Ph.D., University of Minnesota.
- TRUELOVE, BRYAN *Associate Professor, 1967*
B.Sc. (Honors), Ph.D., University of Sheffield.
- KLEPPER, ELIZABETH L. *Assistant Professor, 1968*
B.A., Vanderbilt University; M.A., Ph.D., Duke University.
- LATHAM, ARCHIE J. *Assistant Professor, 1967*
B.S., Idaho State College; M.S., University of Idaho; Ph.D., University of Illinois.
- RODRIGUEZ, KABANA R. *Assistant Professor, 1965*
B.S., M.S., Ph.D., Louisiana State University.
- KELLEY, WALTER D. *Research Associate, 1966*
B.S., M.S., Auburn University.
- SUBIRATS, FERNANDO J. *Research Associate, 1968*
B.S., University of Havana; M.S., Auburn University.
- REBOIS, R. V. *Nematologist (Coop. USDA), 1965*
B.A., San Jose State College.

Dairy Science

- AUTREY, K. M. *Professor and Head of Department, 1947*
B.S., Louisiana State University; M.S., Ph.D., Iowa State University.
Temporarily detached from his duties as Head of Department to serve as Assistant to the Dean of Graduate Studies and to the Director of Education, Instituto Colombiano Agropecuario, Bogota, Colombia.
- WARREN, W. M. *Professor and Acting Head of Department, 1955, 1969*
B.S., Michigan State University; M.S., Texas A&M University; Ph.D., University of Missouri.
- CANNON, R. Y. *Professor, 1948, 1960*
B.S., Iowa State University; M.S., Ohio State University; Ph.D., University of Wisconsin.
- HAWKINS, G. E., JR. *Professor, 1952, 1959*
B.S., Western Kentucky State University; M.S., University of Georgia; Ph.D., North Carolina State University.
- MCCASKEY, THOMAS A. *Assistant Professor, 1967*
B.S., Ohio University; M.S., Ph.D., Purdue University.
- ROLLINS, G. H. *Associate Professor, 1948, 1953*
B.S., M.S., Virginia Polytechnic Institute; Ph.D., University of Illinois.
- LITTLE, JOE ALLEN *Instructor, 1959, 1962*
B.S., Western Kentucky State University; M.S., Auburn University.

Forestry

- DEVALL, WILBUR B. *Professor and Head of Department, 1946, 1951*
B.S., Syracuse University; M.S., University of Florida.
- GARIN, G. I. *Professor, 1948, 1952*
B.S., M.S., University of Idaho; Ph.D., Yale University.
- GOGGANS, J. F. *Professor, 1947, 1963*
B.S., University of Georgia; M.F., Duke University; Ph.D., North Carolina State University.
- HODGKINS, E. J. *Professor, 1952, 1957*
B.S., Michigan State University; M.S., University of California; Ph.D., Michigan State University.
- JOHNSON, E. W. *Professor, 1950, 1967*
B.S., University of New Hampshire; M.F., Yale University; Ph.D., Syracuse University.
- BEALS, HAROLD O. *Associate Professor, 1960, 1969*
B.S.F., M.S., Ph.D., Purdue University.
- BIBLIS, EVANGELOS J. *Associate Professor, 1965*
B.F., University of Thessaloniki; M.F., D.F., Yale University.
- CARTER, MASON C. *Alumni Associate Professor, 1960, 1969*
B.S., M.S., Virginia Polytechnic Institute; D.F., Duke University.

- POSEY, H. G. Associate Professor, 1950, 1959
B.S.F., M.S.F., North Carolina State University.
- SOMBERG, SEMOUR I. Associate Professor, 1968
B.S.F., Iowa State University; M.F., D.F., Duke University.
- WHIPPLE, S. D. Associate Professor (Rt. 2, Fayette), 1958
B.S., M.F., University of Michigan.
- DAVIS, TERRY C. Assistant Professor, 1965
B.S., M.S., Virginia Polytechnic Institute; Ph.D., West Virginia University.
- DEBRUNNER, L. E. Assistant Professor, 1961
B.S., University of Cincinnati; M.F., Yale University; D.F., Duke University.
- LARSEN, HARRY S. Assistant Professor, 1959, 1964
B.S., Rutgers University; M.S., Michigan State College; Ph.D., Duke University.
- LIVINGSTON, K. W. Assistant Professor, 1948, 1949
B.S., University of South Carolina; M.F., Duke University.
- LYLE, E. S., JR. Assistant Professor, 1957
B.S., University of Georgia; M.F., Duke University.
- GOODING, J. W., III. Research Associate, 1969
B.S., University of Florida.
- LYNCH, K. D. Research Associate, 1969
B.S., M.S., Oklahoma State University.
- WARNKE, C. F. Research Associate (Rt. 2, Fayette), 1969
B.S., Auburn University.

Home Economics

- COMPTON, NORMA H. Head of Department, 1968
A.B., George Washington University; M.S., Ph.D., University of Maryland.
- DAVIS, ELIZABETH Y. Coordinator of Research and Professor, 1957, 1969
B.S., Colorado State University; M.S., Ph.D., Auburn University.
- VAN DE MARK, MILDRED S. Professor, 1938, 1964
B.S., Auburn University; M.A., Columbia University.
- MAXWELL, JOSEPH W. Associate Professor, 1969
B.A., Louisiana College; M.S., Ph.D., Florida State University.
- MORTON, SUE BRAKEBILL. Associate Professor, 1962, 1967
B.S., M.S., Ph.D., Texas Woman's University.
- HAMID, HASSAN A. Assistant Professor, 1965, 1968
B.S., Fresno State College; M.S., Montana State University; Ph.D., University of Georgia.
- SHEN, MARIA G. Instructor, 1967
B.S., Taiwan Prov. Chung-Hsing University; M.S., Auburn University.

Horticulture

- PERKINS, DONALD Y. Professor and Head of Department, 1966
B.S., M.S., Louisiana State University; Ph.D., Cornell University.
- AMLING, HARRY J. Professor, 1958, 1968
B.S., Rutgers University; M.S., University of Delaware; Ph.D., Michigan State University.
- GREENLEAF, W. H. Professor, 1947
B.S., Ph.D., University of California at Berkeley.
- ORR, HENRY P. Professor, 1947, 1962
B.S., Auburn University; M.S., Ph.D., Ohio State University.
- CHAMBLISS, OYETTE L. Associate Professor, 1970
B.S., M.S., Auburn University; Ph.D., Purdue University.
- HARRIS, HUBERT. Associate Professor, 1936, 1948
B.S., M.S., Auburn University.
- NORTON, JOSEPH D. Associate Professor, 1960, 1967
B.S., M.S., Auburn University; Ph.D., Louisiana State University.
- JOHNSON, W. A. Assistant Professor, 1937, 1950
B.S., M.S., Auburn University.
- RYMAL, KENNETH S. Assistant Professor, 1966
B.S., Massachusetts Institute of Technology; M.S., University of Florida.
- SANDERSON, KENNETH C. Assistant Professor, 1966
B.S., Cornell University; M.S., Ph.D., University of Maryland.

- MARCUS, KAREN A. *Research Associate*, 1968
B.S., Auburn University.
- MARTIN, W. C., JR. *Instructor*, 1951, 1958
B.S., Auburn University.
- MILLER, LONDON C. *Research Associate*, 1967
B.S., M.S., Clemson University.
- TURNER, JACK L. *Research Associate*, 1955, 1959
B.S., M.S., Auburn University.
- BRYCE, HARRISON M. *Field Superintendent*, 1967, 1968
B.S., Auburn University.

Meteorology

- MOTT, PAUL A. *Advisory Agricultural Meteorologist (Coop. ESSA-USDI)*, 1962

Poultry Science

- MOORE, CLAUDE H. *Professor and Head of Department*, 1956, 1959
B.S., Auburn University; M.S., Kansas State University; Ph.D., Purdue University.
- COTTIER, G. J. *Professor*, 1930, 1949
B.S., Auburn University; M.A., University of Missouri; D.V.M., Auburn University.
- EDGAR, S. A. *Professor*, 1947, 1950
A.B., Sterling College; M.S., Kansas State University; Ph.D., University of Wisconsin; Sc.D., Sterling College.
- MORA, E. C. *Professor*, 1958, 1967
B.S., University of New Mexico; M.S., New Mexico State University; Ph.D., Kansas State University.
- GOODMAN, J. G. *Associate Professor*, 1939, 1946
B.S., M.S., Auburn University.
- JOHNSON, L. W. *Associate Professor*, 1948, 1955
A.B., Cornell College; M.S., Auburn University; Ph.D., Texas A&M University.
- MCDANIEL, GAYNER R. *Associate Professor*, 1968
B.S., M.S., Auburn University; Ph.D., Kansas State University.
- BREWER, ROBERT N. *Assistant Professor*, 1968
B.S., M.S., Auburn University; Ph.D., University of Georgia.
- CHO, YUNG *Assistant Professor*, 1969
D.V.M., National Taiwan University; B.S., Ph.D., Auburn University.

Publications

- WHITE, J. HERBERT *Director, University Relations*, 1960, 1966
B.S., Auburn University.
- MCGRAW, E. L. *Head of Department*, 1941, 1968
B.S., M.S., Auburn University.
- STEVENSON, R. E. *Associate Editor*, 1955, 1960
B.S., Auburn University.
- HARWOOD, JOSEPH D. *Assistant Editor*, 1968
B.S., Texas A&M University.

Research Data Analysis

- PATTERSON, R. M. *Professor*, 1949, 1968
B.S., M.S., University of Florida; Ph.D., Pennsylvania State University.
- MCGUIRE, JOHN A. *Assistant Professor*, 1968
B.S., M.S., Mississippi State University; Ph.D., Auburn University.

Zoology-Entomology

- ARANT, F. S. *Professor and Head of Department*, 1926, 1949
B.S., M.S., Auburn University; Ph.D., Iowa State University.
- DENDY, JOHN STILES *Professor*, 1947, 1957
B.S., Presbyterian College; M.A., University of North Carolina; Ph.D., University of Michigan.
- HAYS, KIRBY LEE *Professor*, 1957, 1964
B.S., M.S., Auburn University; Ph.D., University of Michigan.

- LAWRENCE, J. M. _____ *Professor*, 1941, 1963
B.S., M.S., Auburn University; Ph.D., Iowa State University.
- SWINGLE, H. S. _____ *Alumni Research Professor*, 1929, 1968
B.S., M.S., Sc.D., Ohio State University.
- ALLISON, RAY _____ *Associate Professor*, 1950, 1962
B.S., Western Carolina College; M.S., North Carolina State University; Ph.D., Louisiana State University.
- BASS, MAX H. _____ *Associate Professor*, 1959, 1967
B.S., Troy State University; M.S., Ph.D., Auburn University.
- BERGER, ROBERT S. _____ *Associate Professor*, 1963
B.S., M.S., Texas A&M University; Ph.D., Cornell University.
- CUNNINGHAM, HUGH B. _____ *Associate Professor*, 1951, 1965
B.S., M.S., Auburn University; Ph.D., University of Illinois.
- HYCHE, LACY L. _____ *Associate Professor*, 1952, 1960
B.S., M.S., Auburn University.
- IVEY, W. D. _____ *Associate Professor*, 1947, 1962
B.S., M.S., Auburn University; Ph.D., Emory University.
- LOVELL, R. T. _____ *Associate Professor*, 1969
B.S., M.S., Oklahoma State University; Ph.D., Louisiana State University.
- MOSS, DONOVAN D. _____ *Associate Professor*, 1967
B.S., M.S., Auburn University; Ph.D., University of Georgia.
- PRATHER, E. E. _____ *Associate Professor*, 1941, 1950
B.S., Auburn University; M.S., University of Michigan.
- SHELL, E. WAYNE _____ *Associate Professor*, 1952, 1965
B.S., M.S., Auburn University; Ph.D., Cornell University.
- ESTES, PAUL M. _____ *Assistant Professor*, 1966
B.Sc., Purdue University; Ph.D., University of California.
- CAUSEY, MILES K. _____ *Assistant Professor*, 1968
B.S., M.S., Ph.D., Louisiana State University.
- GILLILAND, FLOYD R. _____ *Assistant Professor*, 1967
B.S., Arkansas Polytechnic College; M.S., University of Arkansas; Ph.D., Mississippi State University.
- GREENE, GEORGE N. _____ *Assistant Professor*, 1963, 1964
B.A., Rice University; M.S., University of Michigan; Ph.D., Auburn University.
- HARPER, JAMES D. _____ *Assistant Professor*, 1969
B.S., M.S., Univ. of Ill.; Ph.D., Oregon State University.
- JEFFREY, NORRIS B. _____ *Assistant Professor*, 1968, 1969
B.S., North Carolina State University; Ph.D., Auburn University.
- KOUSKOLEKAS, COSTAS A. _____ *Assistant Professor*, 1967
B.S., University of Thessaloniki; M.S., University of Missouri; Ph.D., University of Illinois.
- PARDUE, GARLAND B. _____ *Assistant Professor*, 1968, 1969
B.S., M.S., North Carolina State University; Ph.D., Auburn University.
- RAMSEY, JOHN S. _____ *Leader, Fishery Research Unit (Coop. USDI)*, 1967
B.S., Cornell University; Ph.D., Tulane University.
- ROGERS, W. A. _____ *Assistant Professor*, 1964, 1967
B.S., Southern Mississippi University; M.S., Ph.D., Auburn University.
- SMITHERMAN, RENFORD O. _____ *Assistant Professor*, 1967
B.S., Auburn University; M.S., North Carolina State University; M.S., Ph.D., Auburn University.
- SCHMITTOW, H. R. _____ *Assistant Professor*, 1968, 1969
B.S., Tennessee Technological University; M.S., Ph.D., Auburn University.
- SPEAKE, DAN W. _____ *Leader, Wildlife Research Unit (Coop. USDI)*, 1955, 1967
B.S., M.S., Ph.D., Auburn University.
- BARKULOO, J. M. _____ *Assistant Leader, Fishery Research Unit*, 1969
B.S., Florida State University; M.S., Stilson University.
- HILL, EDWARD P., III _____ *Assistant Leader, Wildlife Research Unit*, 1967
B.S., Oregon State University; M.S., Auburn University.
- PLUMB, JOHN A. _____ *Research Associate*, 1969
B.A., Bridgewater College; B.S., Southern Illinois University.

SUBSTATIONS AND FIELDS

Black Belt—Marion Junction, Dallas County

- SMITH, L. A. _____ Superintendent, 1951, 1957
 B.S., Auburn University.
- GRIMES, HAROLD W., JR. _____ Assistant Superintendent, 1955, 1957
 B.S., M.S., Auburn University.

Chilton Area Horticulture—Clanton, Chilton County

- CARLTON, C. C. _____ Superintendent, 1948
 B.S., Auburn University.
- SHORT, KENNETH C. _____ Assistant Superintendent, 1960
 B.S., Auburn University.

Gulf Coast—Fairhope, Baldwin County

- YATES, HAROLD F. _____ Superintendent, 1931, 1959
 B.S., Auburn University.
- BARRETT, J. E., JR. _____ Assistant Superintendent, 1948
 B.S., Auburn University.
- MCDANIEL, N. R. _____ Assistant Superintendent, 1969
 B.S., Auburn University.

Lower Coastal Plain—Camden, Wilcox County

- BROWN, V. L. _____ Superintendent, 1949
 B.S., Mississippi State University.
- FOWLER, WILLIAM E. _____ Assistant Superintendent, 1965
 B.S., Berry College.
- WATSON, W. J. _____ Assistant Superintendent, 1958
 B.S., Auburn University.

North Alabama Horticulture—Cullman, Cullman County

- HOLLINGSWORTH, M. H. _____ Superintendent, 1958, 1962
 B.S., Auburn University.

Piedmont—Camp Hill, Tallapoosa County

- MAYTON, E. L. _____ Superintendent, 1929, 1945
 B.S., Auburn University; M.S., University of Vermont.
- BURGESS, HOYT E. _____ Assistant Superintendent, 1967
 B.S., Auburn University.

Sand Mountain—Crossville, DeKalb County

- GISSENDANNER, S. E. _____ Superintendent, 1941, 1946
 B.S., Auburn University.

Tennessee Valley—Belle Mina, Limestone County

- BOSECK, J. K. _____ Superintendent, 1937, 1954
 B.S., Auburn University.
- WEBSTER, W. B. _____ Assistant Superintendent, 1958, 1965
 B.S., M. of Agri., Auburn University.

Upper Coastal Plain—Winfield, Fayette & Marion Counties

- MOORE, ROBERT A., JR. _____ Superintendent, 1959, 1969
 B.S., M. of Agri., Auburn University.
- WALLACE, B. J. _____ Assistant Superintendent, 1969
 B.S., Auburn University.

Wiregrass—Headland, Henry County

- BROGDEN, C. A. _____ Superintendent, 1937, 1950
 B.S., Auburn University.

- IVEY, HENRY W. *Assistant Superintendent, 1960, 1966*
 B.S., Auburn University.
- STARLING, J. G. *Assistant Superintendent, 1948*
 B.S., Auburn University.

Ornamental Horticulture Field Station—Spring Hill, Mobile County

- SELF, R. L. *Plant Pathologist, 1942, 1952*
 B.S., M.S., Auburn University; Ph.D., University of Wisconsin.
- DRISKELL, NATHAN A. *Assistant Superintendent, 1967*
 B.S., Louisiana State University.

Brewton & Monroeville Fields—Escambia & Monroe Counties

- CARDEN, EMMETT. *Superintendent (Brewton), 1969*
 B.S., Auburn University.

Prattville & Tuskegee Fields—Autauga & Macon Counties

- GLAZE, FRED T. *Superintendent (Prattville), 1954, 1969*
 B.S., Auburn University.

COOPERATIVE EXTENSION SERVICE STAFF

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., *President*

- ROBERTSON, FRED R., JR. *Vice President for Extension and
Director of Cooperative Extension Service*, 1959, 1966
B.S., M.S., University of Tennessee; Dr.P.A., Harvard University.
- JONES, RALPH R. *Associate Director*, 1936, 1962
B.S., Auburn University; M.S., Michigan State University.
- TAYLOR, W. H. *Assistant Director*, 1946, 1965
B.S., Auburn University; M.S., Ed.D., Cornell University.
- WARREN, HOYT M. *Assistant Director*, 1945, 1965
B.S., Auburn University; M.S., Ed.D., Cornell University.
- COLEMAN, MARY E. *Assistant Director for Women's Work*, 1936, 1965
B.S., Auburn University; M.A., Columbia University.
- HILL, W. B. *Assistant to the Director*, 1935, 1965
B.S., Tuskegee Institute; M.S., Cornell University; Ph.D., University of Wisconsin.
- HORN, ROBERT C. *Head (Management Service)*, 1944, 1969
B.S., Auburn University; M.S., University of Wisconsin.
- SHERER, RALPH L. *Coordinator (Continuing Education)*, 1955, 1969
B.S., Auburn University; M.S., Cornell University.
- WHITE, J. HERBERT *Director (University Relations)*, 1960, 1966
B.S., Auburn University.
- WHITE, LOUIS E. *Conference Director*, 1962, 1969
B.S., Auburn University; M.Ed., University of Alabama; Ed.D., North Carolina State University.

SUPERVISORS

- BULLINGTON, JOHN C. *District Extension Chairman*, 1939, 1965
B.S., Auburn University.
- DAVIS, S. L. *District Extension Chairman*, 1942, 1965
B.S., Auburn University; M.S., Cornell University.
- LUMPRIN, T. W. *District Extension Chairman*, 1934, 1965
B.S., Auburn University.
- McMILLAN, GEORGE D. H. *District Extension Chairman*, 1942, 1965
B.S., Auburn University.
- HULSEY, MARY *Associate District Extension Chairman*, 1941, 1965
B.S., Auburn University; M.A., Columbia University.
- IVEY, EUNICE *Associate District Extension Chairman*, 1949, 1965
B.S., University of Montevallo; M.S., University of Alabama.
- MALLETTE, LUCILE *Associate District Extension Chairman*, 1936, 1965
B.S., Auburn University; M.S., University of Minnesota.
- PARKMAN, PATTY *Associate District Extension Chairman*, 1947, 1965
B.S., University of Montevallo.

DIVISION CHAIRMEN

- CAVENDER, A. R. *Chairman (Resource Use Division)*, 1958, 1965
B.S., M.S., University of Tennessee; Ph.D., University of Wisconsin.
- PARROTT, JOHN *Chairman (Extension Information)*, 1941, 1969
B.S., M.Ed., Auburn University.
- GOSSETT, JOHN WARREN *Chairman (Animal Science Division)*, 1962
B.S., University of Tennessee; M.S., Ph.D., Texas A&M University.
- HAGLER, THOMAS BENJAMIN *Chairman (Plant Science Division)*, 1960
B.S., M.S., Auburn University; Ph.D., University of Maryland.
- LANIER, WORTH *Chairman (Environmental Health Division)*, 1960, 1969
B.S., Mississippi State University; D.V.M., Auburn University.

SPECIALISTS

- AGNEW, THOMAS R. *4-H Club Specialist*, 1935, 1965
B.S., M.Ed., Tuskegee Institute.
- ALLEY, J. LEE *Extension Veterinarian*, 1969
B.S., Auburn University; D.V.M., Auburn University.
- ANDREWS, OLIN N. *Agronomist*, 1942, 1955
B.S., M.S., Auburn University.
- BAGBY, JOHN *Extension Horticulturist (Fruits & Nuts)*, 1944, 1969
B.S., Virginia Polytechnic Institute.
- BALCH, TALMADGE G. *Specialist in Pesticide Education*, 1957, 1965
B.S., M.Ag., Auburn University.
- BARR, ANN *State 4-H Club Leader for Girls*, 1945, 1950
B.S., University of Montevallo.
- BASKINS, CHARLES C. *Specialist in Pesticide Education*, 1965
B.S., M.Ag., Auburn University.
- BICE, VERNON C. *Radio & TV Editor*, 1958, 1964
B.S., M.Ag., Auburn University.
- BOND, M. D. *Peanut Specialist*, 1955, 1969
B.S., M.Ag.Ed., Auburn University.
- BROWN, A. J. *Specialist (Marketing)*, 1948, 1963
B.S., M.Ag.Ec., Auburn University.
- BRYAN, ELIZABETH *Economist (Home Management)*, 1939, 1957
B.S., Auburn University; M.S., University of Tennessee.
- BUFORD, JAMES A., JR. *Forest Products Marketing and Utilization Specialist*, 1965, 1966
B.S., M.S., Auburn University.
- BURDETT, ROBERT A. *Agronomist (Seed)*, 1968
B.S., M.S., Auburn University.
- CHAPMAN, LOUIE J. *Specialist (Agronomy)*, 1967
B.S., M.S., Auburn University; Ph.D., University of Florida.
- CHENEY, WALTER K. *Art Editor*, 1958, 1962
B.A.A., Auburn University.
- CLARK, ROBERT R. *Specialist (Recreation)*, 1954, 1965
B.S., M.S., Auburn University.
- COLLINS, RICHARD JAMES *Extension Plant Pathology Assistant*, 1967
B.S., University of Miami; M.S., Texas A&M University.
- COPELAND, KENNETH J. *News Editor*, 1957, 1960
B.S., M.Ag.Ed., Auburn University.
- DANION, JAMES RICHARD *Animal Husbandman*, 1960, 1965
B.S., M.S., University of Georgia.
- DAVIS, CECIL G. *District Program Specialist*, 1948, 1966
B.S., M.Ag., Auburn University.
- DEESE, RICHARD E. *Animal Husbandman*, 1965
B.S., M.S., Mississippi State University; Ph.D., University of Florida.
- DENNIS, CARL *Apiculturist*, 1954, 1968
B.S., M.Ag., Auburn University.
- DOWNNEY, ISABELLE *Specialist (Food Preservation)*, 1944, 1958
B.S., Auburn University; M.S., University of Georgia.
- EICH, SAMUEL M., JR. *Specialist in Cotton*, 1957, 1968
B.S., M.Ag., Auburn University.
- ELLIOTT, JOHN, JR. *Specialist (Pesticide Education)*, 1953, 1966
B.S., M.Ag., Auburn University.
- ENNIS, LAWRENCE *Specialist (Soil Engineering)*, 1945, 1949
B.S., Auburn University.
- FARRAR, LUTHER L. *Specialist (Plant Pathology and Nematology)*, 1966
B.S., Centenary College; M.S., Ph.D., Louisiana State University.
- FITE, BARBARA A. *Specialist (Human Development)*, 1956, 1966
B.S., University of Montevallo; M.S., University of Alabama.

- GIVHAN, JOE P. *Specialist (Rural Resource Development)*, 1935, 1963
B.S., Auburn University.
- GLASSCOCK, M. R. *Specialist (Fruits and Vegetable Marketing)*, 1941, 1962
B.S., Auburn University.
- HENDERSON, J. B. *Agronomist (Soybeans)*, 1960, 1969
B.S., M.S., Auburn University; Ph.D., North Carolina State University.
- HERD, DENNIS B. *Extension Animal Husbandman*, 1967
B.S., Berea College; M.S., Ph.D., University of Kentucky.
- HIGH, THOMAS W. JR. *Extension Animal Husbandman*, 1966
B.S., University of Florida; M.S., Ph.D., University of Tennessee.
- HOLLEY, BETTY B. *Specialist (Educational Methods)*, 1969
B.S., University of Tennessee; M.S., University of Alabama.
- HUDDLESTON, NORMAN R. *Economist*, 1968
B.S., Tennessee Technological University; M.S., University of Tennessee; Ph.D., Mississippi State University.
- JOHNSON, PAUL O. *Specialist (Rural Resource Development)*, 1959, 1965
B.S., M.Ed., Auburn University.
- JONES, BERTHA MAE *4-H Club Specialist*, 1945, 1965
B.S., Alabama A&M University; M.Ed., Pennsylvania State University.
- JONES, ROBERT F. *Resource Management Specialist*, 1949, 1969
B.S., Tuskegee Inst.; M.Ed., North Carolina State University.
- JONES, R. S., JR. *Dairyman*, 1941, 1959
B.S., Auburn University.
- KENNER, E. F. *Specialist (Wildlife)*, 1940, 1960
B.S., M.S., Auburn University.
- LEDBETTER, ROY J. *Entomologist*, 1954, 1962
B.S., M.S., Auburn University; Ph.D., Mississippi State University.
- LEE, VERRON WILSON *Specialist (Poultry Marketing)*, 1965, 1967
B.S., Auburn University; M.S., University of Arizona.
- LEEPER, RAYMOND O., III *Specialist (Entomology)*, 1967
B.S., M.S., Mississippi State University.
- LINK, JAMES GORDON *Agronomist*, 1959, 1963
B.S., M.S., Auburn University.
- LINTON, DANIEL A., JR. *Specialist (Livestock Marketing)*, 1962
B.S., M.S., Auburn University.
- LOGUE, H. E. *State 4-H Club Leader*, 1942, 1948
B.S., M.Ag.Ed., Auburn University.
- MCDANIEL, CLARENCE H. *Resource Management Specialist*, 1952, 1969
B.S., M.S., Alabama A&M University.
- MCQUEEN, HOUSTON FRANK *Survey Entomologist*, 1963
B.S., Auburn University.
- MADDOX, C. L. *Specialist (Farm Management), TVA*, 1954, 1960
B.S., M.S., Auburn University.
- MARABLE, JOHNIE A. *District Program Specialist*, 1955, 1966
B.S., M.S., Auburn University.
- MARABLE, VIRGINIA H. *Assistant Specialist (Educational Methods)*, 1969
B.S., Auburn University.
- MARKS, HERMAN H. *District Program Specialist*, 1954, 1963
B.S., M.Ag., Auburn University.
- MAYFIELD, M. CECIL *4-H Editor*, 1955, 1966
B.S., M.Ag., Auburn University.
- OGBURN, CHARLES B. *Agricultural Engineer*, 1968
B.S., M.S., Virginia Polytechnic Institute.
- OVERBY, DOROTHY *Specialist (Consumer Education)*, 1943, 1949
B.S., University of Tennessee.
- OWENS, BARBARA A. *Specialist (Educational Methods)*, 1958, 1969
B.S., Florence State University.
- PARKER, CARL *Specialist in Horticultural Production*, 1944, 1961
B.S., Auburn University.

- PARRISH, J. R. _____ *Dairyman*, 1938, 1948
B.S., M.S., Auburn University.
- PEAVY, ALICE _____ *Economist (Home Furnishings)*, 1941, 1959
B.S., University of Alabama; M.A., Columbia University.
- PRICKETT, FARRIS _____ *Specialist (Foods and Nutrition)*, 1955, 1958
B.S., M.S., Auburn University.
- RIVERS, RUTH L. _____ *Specialist (Community Health Education)*, 1937, 1969
B.S., Tuskegee Institute; M.A., Columbia University.
- ROBERTS, LARRY W. _____ *Resource Management Specialist*, 1960, 1968
B.S., M.S., Auburn University.
- SEGREST, CHARLES H. _____ *Specialist (Rural Resource Development)*, 1956, 1962
B.S., M.Ag.Ed., Auburn University.
- SHIPP, TRAVIS _____ *Specialist (Rural Resource Development—Ind. Mgmt.)*, 1967
B.I.M., M.B.A., Auburn University.
- SHUMACK, RONALD LEE _____ *Extension Floriculturist*, 1963, 1969
B.S., M.Ag.Ed., Auburn University.
- SMITH, JACK D. _____ *News Editor*, 1962
B.A., Auburn University.
- SMITH, PERRY M. _____ *Extension Horticulturist—Vegetables*, 1966, 1969
B.S., Clemson University; M.S., North Carolina State University.
- SOWELL, WALTER F. _____ *Soils Specialist*, 1948, 1960
B.S., M.S., Auburn University; Ph.D., Purdue University.
- SPEARMAN, GENTA S. _____ *Specialist (Housing and Equipment)*, 1966
B.S., M.S., Auburn University.
- STOREY, CLEVELAND U. _____ *Specialist (Rural Resource Development)*, 1965
B.S., Auburn University; M.Ag., University of Florida.
- STRAIN, WILLIE LEE _____ *News Editor*, 1955, 1965
B.S., M.Ed., Tuskegee Institute.
- STRAWN, HARRY _____ *Resource Development Economist*, 1969
B.S., North Carolina State University; M.S., University of Tennessee.
- STRICKLAND, ELMER OSCAR _____ *District Program Specialist*, 1961, 1963
B.S., M.Ag.Ed., Auburn University.
- TERRELL, ROBERT N. _____ *Specialist (Food Science)*, 1966
B.S., Oklahoma State University; M.S., University of Tennessee; Ph.D., University of Wisconsin.
- THOMAS, CHARLES F. _____ *Specialist (Poultry)*, 1958, 1966
B.S., M.S., Auburn University.
- THOMPSON, KATHLEEN _____ *Specialist (Clothing)*, 1944, 1969
B.S., University of Alabama; M.S., Pennsylvania State University.
- THORNHILL, H. B. _____ *Extension Horticulturist (Ornamentals)*, 1941, 1969
B.S., Auburn University; M.S., Clemson University.
- TIDWELL, MACON B. _____ *Specialist (Rural Resource Development)*, 1957, 1961
B.S., M.Ag., Auburn University.
- WADE, LARKIN H. _____ *Extension Forester*, 1965
B.S., M.S., Auburn University.
- WALKER, CLEO S. _____ *Specialist (Clothing)*, 1958, 1969
B.S., M.S., Tuskegee Institute.
- WATSON, HAROLD _____ *Specialist (Agricultural Engineering)*, 1966
B.S., M.S., Louisiana State University.
- WHITTENBURG, BOBBY LEROY _____ *A-H Livestock Specialist*, 1965
B.S., M.S., University of Tennessee.
- WILLIAMS, GERTHEN E. _____ *Visual Editor*, 1960, 1967
B.S., Auburn University.
- WILLIAMS, WILLIAM R. _____ *Resource Management Specialist*, 1946, 1968
B.S., Auburn University; M.S., University of Tennessee.
- WILSON, WILLIAM E. _____ *Specialist (Rural Resource Development)*, 1954, 1961
B.S., M.Ag., Auburn University.

OTHER STAFF

BROWN, GRACE F.	Administrative Assistant, 1958, 1966
GOOD, MYRTLE	Administrative Assistant, 1929, 1966
JETER, DALENE	Administrative Assistant, 1928, 1966
JETER, RENNIE	Business Assistant, 1934, 1947

COUNTY STAFFS

(List for each county as follows: County Address, county extension chairman, extension farm agent; associate county extension chairman, extension home agent; first appointment, present appointment. All degrees are from Auburn University unless otherwise indicated.)

AUTAUGA Prattville	R. H. Kirkpatrick, B.S., M.Ed., 1944, 1965; Jerry A. Green, B.S., Tuskegee Institute, 1954, 1965; Max F. Scott, B.S., 1962-1965. Elaine Brooks Alberson, B.S., Samford University, 1969; Louvenia A. Lee, B.S., Tuskegee Institute, 1955, 1965.
BALDWIN Bay Minette	F. C. Turner, B.S., 1938, 1965; W. H. Johnson, B.S., 1934, 1965; Donald Eugene Dunn, B.S., 1962, 1965; Edward J. Coats, B.S., Western Kentucky State University; M.S., 1966. Mary C. Silvey, B.S., 1955, 1965; Eugenia Small, B.S., 1937, 1965; Helen V. Norris, B.S., University of Montevallo, 1969.
BARBOUR Clayton	J. W. Walton, B.S., 1946, 1965; Jerry L. Brown, B.S., 1967; William H. Lindsey, B.S., Tuskegee Institute, 1966. Marilyn Dees Bennett, B.S., 1964, 1965; Linda Eason, B.S., University of Alabama, 1969; Tommie W. Clark, B.S., Tuskegee Institute, 1940, 1965
BIBB Centreville	J. C. Odom, B.S., 1935, 1965; T. W. Camp, B.S., 1951, 1965. Jane Dowdle, B.S., University of Alabama, 1967, 1969; Donna Miller, B.S., 1969.
BLOUNT Oneonta	D. S. Loyd, B.S., M.Ag., 1942, 1965; James O. Conway, B.S., M.Ed., 1967; L. C. McCall, B.S., 1955, 1965. Mildred Gilbert, B.S., M. of H. Ec., 1944, 1965.
BULLOCK Union Springs	W. E. Stone, B.S., M.Ag., 1947, 1965; Henry M. Brooks, B.S., M.Ed., Tuskegee Institute, 1967; William Wright Curtis, B.S., M.Ed., 1963, 1965. Carolyn Henderson, B.S., 1941, 1965; Nannie S. Rhodes, B.S., Southern University, 1959, 1965.
BUTLER Greenville	F. H. Morgan, B.S., M.Ag., 1946, 1965; J. P. Moore, B.S., M.Ag., 1953, 1965; Jacob H. Ross, B.S., Tuskegee Institute, M.A., Michigan State University, 1950, 1965; R. C. Thompson, B.S., 1954, 1965. Laurine Howell, B.S., University of Alabama, 1949, 1965; Marie E. Mixon, B.S., Tuskegee Institute, 1967; Mary Ella Jordan, B.S., University of Alabama, 1969.
CALHOUN Anniston	A. S. Matthews, B.S., 1941, 1965; Goode Nelson, B.A., University of Alabama, 1945, 1965; L. G. Pair, B.S., M.Ag., 1948, 1965; John D. Sellers, B.S., 1949, 1966. Shirley H. Green, B.S., 1961, 1965; Peggy Sue Dean, B.S., 1967.
CHAMBERS LaFayette	Howard A. Taylor, B.S., M.Ag.Ed., 1962, 1967; Larry D. Easterwood, B.S., 1961, 1965; Willie Lawson, B.S., Alabama A&M University, M.Ed., Tuskegee Institute, 1947, 1965; E. L. Stewart, B.S., M.S., 1944, 1967. Exa Till, B.S., 1946, 1965; Mary Frances Griggs, B.S., Alabama A&M University, 1952, 1965; Ruth Walls, B.S., University of Montevallo, 1969.

- CHEROKEE Centre** J. J. Young, B.S., M.S., 1933, 1965; J. B. Butler, B.S., 1954, 1967; Charles R. Moody, B.S., 1964, 1965. Geneva Marshall James, B.S., 1941, 1965; Irene J. Lackey, B.S., 1965, 1967.
- CHILTON Clanton** W. R. Futral, B.S., M.Ag., 1959, 1965; Joseph Dale Lowry, B.S., 1969; D. R. Mims, B.S., 1953, 1965. Mrs. Johnnie Lane, A.B., Judson College, 1952, 1965; Sarah Hickman McDowell, B.S., University of Montevallo, 1967.
- CHOCTAW Butler** Mathew Sexton, B.S., 1937, 1965; Joseph T. Banks, B.S., M.Ed., Tuskegee Institute, 1947, 1965; R. B. Deavours, B.S., 1946, 1965. Grace M. Prince, B.S., 1951, 1965; Dale B. Dawkins, B.S., University of Alabama, 1967; Gladys A. Horn, B.S., Tuskegee Institute, 1950, 1965.
- CLARKE Grove Hill** O. C. Helms, B.S., 1930, 1965; Robert E. Kelley, B.S., 1969. Sara G. Alexander, B.S., Mississippi State College for Women, 1967; Joe Ann Arthur, B.S., University of Southern Mississippi, 1967.
- CLAY Ashland** W. H. Cowan, B.S., 1936, 1965; Loyd P. Owens, B.S., M.Ag., 1954, 1965. Dora-grace Smith, B.S., University of Montevallo, 1952, 1965; Julie Jones Miller, B.S., University of Montevallo, 1969.
- CLEBURNE Heflin** T. A. Ventress, B.S., 1937, 1965; E. C. Farrington, B.S., 1941, 1965. Annie Rae Milner, B.S., University of Montevallo, 1941, 1965; Patricia Crane, University of Southern Mississippi, 1969.
- COFFEE Enterprise** T. C. Casaday, B.S., M.Ag., 1949, 1965; Dan J. Presley, B.S., M.Ag., 1964, 1966; J. R. Speed, 1943, 1965. Sarah Hutchinson, B.S., Howard College, M.S., 1956, 1965; Virginia E. Sanders, B.S., 1964, 1965.
- COLBERT Tuscumbia** D. G. Somerville, B.S., 1939, 1965; Dallas Hollaway, Jr., B.S., 1964, 1965; Harold Eugene Rose, B.S., 1961; Daniel R. Salter, B.S., M.S., Tuskegee Institute, 1949, 1965. Christa Hall, B.S., University of Alabama, 1950, 1965; Margaret M. Creel, B.S., M.S., University of Montevallo, 1964, 1969; Elizabeth S. Stough, B.S., Alabama A&M University; M.Ed., Tuskegee Institute, 1946, 1965.
- CONECUH Evergreen** M. H. Huggins, B.S., 1936, 1965; George W. Jackson, B.S., M.S., Tuskegee Institute, 1966; H. J. Oakley, B.S., 1954, 1965. Louise T. Ostrum, B.S., M.Ed., 1957, 1965; Hazel H. Harpe, B.A., Judson College, 1961, 1965.
- COOSA Rockford** G. S. Sessions, B.S., M.Ag.Ed., 1955, 1965; Elmer Dowdell, B.S., Alcorn A&M College; M.S., Tuskegee Institute, 1957, 1965; Jerry Walls, B.S., 1963, 1965. Mariah B. Brymer, B.S., M.Ed., Tuskegee Institute, 1963, 1965; Barbara Ann Johnson, B.S., University of Montevallo, 1967; Linda W. Meadows, B.S., Samford University; M.Ed., 1969.
- COVINGTON Andalusia** W. H. Kinard, B.S., M.Ag., 1954, 1965; John W. Fryer, B.S., 1964, 1965; Robert E. Linder, B.S., M.Ag., 1960, 1965; C. W. Pike, B.S., M.Ag., 1952, 1965. Mary Ellen Haynes, B.S., University of Montevallo, 1951, 1965; Ann T. Martin, B.S., University of Alabama, 1966.
- CRENSHAW Luverne** Ted B. Smith, B.S., M.S., Troy State University, 1963, 1969; G. B. Handley, B.S., 1948, 1965. Eunice Prater King, B.S., University of Montevallo, 1953, 1965; Doris Welch, B.S., Jacksonville State University, 1969.
- CULLMAN Cullman** H. G. Pinkston, B.S., 1937, 1965; Billy Ray Baswell, B.S., 1966, 1968; M. T. Whisenant, B.S., 1949, 1965. Mary Sue Tillery, B.S., 1947, 1965; Claude L. Dorminey, B.S., University of Georgia, 1967; Peggy M. Harris, B.S., University of Montevallo, 1964, 1965.

- DALE**
Ozark W. D. Thomason, B.S., 1931, 1965; James H. Estes, B.S., M.Ag., 1963, 1965; T. G. Hubbard, B.S., M.Ag., 1936, 1965.
Ruth Sundberg, B.S., M.S., University of Tennessee, 1941, 1965; Angela L. Dollar, B.S., University of Mississippi, 1968.
- DALLAS**
Selma L. C. Alsobrook, B.S., 1942, 1965; Alex C. Brown, B.S., Tuskegee Institute; M.S., Indiana University, 1959, 1965; James S. Hines, B.S., 1966; George C. Hoopes, B.S., 1963, 1967; Charles D. Scott, II, B.S., M.Ed., Tuskegee Institute, 1951, 1965.
Dorothy Hixson, B.S., University of Montevallo, M.S., University of Tennessee, 1937, 1965; Carolyn L. Hicks, B.S., Tuskegee Institute, 1967; Norma M. McCrory, B.S., University of Southern Mississippi, 1961, 1965.
- DeKALB**
Ft. Payne F. DeWitt Robinson, B.S., 1949, 1965; D. C. Poe, B.S., 1956, 1965; Bob Eugene Spears, B.S., Oklahoma State University; M.S., University of Tennessee, 1964, 1965.
Mary Louise Walker, B.S., Peabody College, 1954, 1965; Edith A. Barnes, B.S., Bob Jones University, 1967.
- ELMORE**
Wetumpka J. E. Morriss, B.S., M.S., 1935, 1965; W. E. Davis, B.S., M.S., 1959, 1965; L. Shelton Hawsey, B.S., M.Ed., 1965; Roscoe A. Lee, B.S., M.Ed., Tuskegee Institute, 1947, 1965.
Le Jean Ford, B.S., Texas State University for Women, 1963, 1967; Judith N. Brown, B.S., 1966; Gwendolyn E. Turner, B.S., Alabama A&M University, 1968.
- ESCAMBIA**
Brewton R. J. Martin, B.S., 1946, 1966; Edward M. Knowles, B.S., M.Ag., 1953, 1965; Barry E. Wood, B.S., 1966, 1967.
Peggy Bracken, B.S., 1963, 1965.
- ETOWAH**
Gadsden T. L. Sanderson, B.S., M.S., 1943, 1965; H. J. Jackson, B.S., University of Georgia, 1944, 1965; A. D. Jones, B.S., M.Ag., 1948, 1965.
Sara L. Thomas, B.S., 1947, 1965; Celeste H. Martin, B.S., M.S., 1957, 1965.
- FAYETTE**
Fayette Albert Pitts, B.S., M.Ag., 1952, 1965; James Pettus Tucker, B.S., 1961, 1965.
Annie Mary Hester, B.S., Berry College; M.S., University of Alabama, 1953, 1965; Jean McCracken, B.S., University of Alabama, 1957, 1965.
- FRANKLIN**
Russellville H. A. Ponder, B.S., 1935, 1965; Ellis Raphord Farrington, B.S., 1964, 1965; H. W. Warren, B.S., 1945, 1965.
Joyce McNutt, B.S., 1954, 1965; Eleanor R. Coker, B.S., Samford University, 1966.
- GENEVA**
Geneva R. C. Reynolds, B.S., M.Ag.Ed., 1954, 1965; Dan A. Gary, B.S., 1969.
Sam D. Carroll, B.S., M.Ed., 1963, 1969.
Emily H. Seay, B.S., University of Montevallo, 1960, 1965; Judy S. Herrington, B.S., Northwestern Louisiana State College, 1969.
- GREENE**
Eutaw W. H. Johnson, B.S., 1935, 1965; Frank L. Jackson, B.S., M.Ed., Tuskegee Institute, 1941, 1965; Jerry L. Williams, B.S., 1967, 1969.
Faye Bragg, B.S., University of Alabama, 1964, 1967; Evelyn Blackmon, B.S., Alabama A&M University, 1965.
- HALE**
Greensboro J. B. Deavours, B.S., 1937, 1965; Gwinn Russell Ezell, B.S., Alabama A&M University, 1962, 1965; J. N. Glass, B.S., M.Ag., 1948, 1965; Lee Grant Gober, B.S., M.Ag., 1960, 1967.
Evelyn D. Edwards, B.S., M.S., University of Alabama, 1966; Katie I. Carlton, B.S., Tuskegee Institute, 1950, 1965; Amanda Williams, B.S., University of Montevallo, 1969.
- HENRY**
Abbeville R. C. Hartzog, B.S., 1946, 1965; C. L. Barefield, B.S., 1951, 1965; Louis A. Murray, B.S., Alabama A&M University, 1962, 1965.
Margaret O. Eason Kirkland, B.S., Jacksonville State University, 1961, 1965; Rossie T. Farmer, B.S., Langston University, 1967; Jewel W. Hardwick, B.S., 1958, 1967.

- HOUSTON**
Dothan
Allen M. Mathews, B.S., M.Ag., 1957, 1965; Luther J. McGaughy, B.S., M.Ag., 1960, 1965; Marion H. Roney, B.S., 1962, 1965; Reafield Vester, B.S., Alabama A&M University, 1966.
Julia Smith, B.S., 1955, 1965; Nancy W. Coon Pendrak, B.S., 1968; Mildred Mae Ward, M.S., Alabama A&M University; M.Ed., Tuskegee Institute, 1955, 1965.
- JACKSON**
Scottsboro
B. T. Richardson, B.S., 1945, 1968; Lesel A. Dozier, B.S., 1964, 1965; James H. Pitts, B.S., M.S., Mississippi State University, 1955, 1969. Mrs. Clyde Peck, B.S., 1942, 1965; Betty D. Moore, B.S., 1963, 1969.
- JEFFERSON**
Birmingham
C. H. Johns, B.S., 1937, 1965; Charles E. Smith, B.S., 1966, 1967; William Gaines Smith, B.S., 1965; Percy L. White, B.S., Alabama A&M University; M.Ed., Tuskegee Institute, 1949, 1965; David W. Bradford, B.S., 1969; Margaret Whatley, B.S., M.S., University of Alabama, 1941, 1969.
Rubye J. Robinson, B.S., Philander Smith College, 1945, 1965; Elizabeth Simpson, B.S., University of Alabama, 1969.
- LAMAR**
Vernon
H. H. Lumpkin, B.S., 1950, 1965; C. T. Guthrie, B.S., 1966.
Barbara Alawine, B.S., University of Alabama, 1953, 1965; Elizabeth Puckett, B.S., Mississippi State College for Women, 1969.
- LAUDERDALE**
Florence
L. T. Wagnon, B.S., 1935, 1965; Charles W. Burns, B.S., 1957, 1965; Howard Douglas Hall, B.S., 1962, 1965; Irby J. Harrell, B.S., Berry College, 1963, 1965; Robert T. Hughes, B.S., Alabama A&M University; M.S., Tuskegee Institute, 1958, 1965.
Sara F. Conner, B.S., University of Montevallo, 1949, 1965; Sadie L. McClellan, B.S., Tuskegee Institute, 1944, 1965; Carlene E. Tenpenny, B.S., Middle Tennessee State University, 1967.
- LAWRENCE**
Moulton
S. P. McClendon, B.S., 1943, 1965; Dean Parris, B.S., M.Ag., 1959, 1965.
Ruby Rogers, B.S., Athens College, 1953, 1965; Martha H. Pool, B.S., Jacksonville State University, 1966, 1969; Inez M. Petty, B.S., Alabama A&M University; M.Ed., Tuskegee Institute, 1949, 1965.
- LEE**
Opelika
R. W. Teague, B.S., 1948, 1965; Wm. J. Alverson, B.S., 1965; Thomas Cooksey, B.S., M.Ed., 1964, 1966; Paul Henry Waddy, B.S., Alabama A&M University, 1964, 1965.
Elisabeth Crum, B.S., 1955, 1965; Willie C. Lockhart, B.S., Tuskegee Institute, 1937, 1965; Jo Anna T. Middlebrooks, B.S., 1968.
- LIMESTONE**
Athens
F. K. Agee, B.S., 1945, 1965; Sidney H. Bates, B.S., Tuskegee Institute, 1957, 1969; Watkins L. Carter, B.S., Mississippi State University, 1967; F. Macon Patterson, B.S., 1954, 1968.
Emma Jo Lindsey, B.S., 1948, 1965; Athelstine H. Malone, B.S., Alabama A&M University, 1956, 1965; Charlotte Marshall, B.S., Jacksonville State University, 1965, 1966.
- LOWNDES**
Hayneville
Tom J. Gerald, B.S., M.Ag., 1946, 1969; Scott Billingsley, B.S., M.S., Tuskegee Institute, 1951, 1965.
Mary Maddux, B.S., 1957, 1965; Olean P. Cunningham, B.S., Tuskegee Institute, 1950, 1965.
- MACON**
Tuskegee
J. M. Bolling, B.S., 1939, 1965; Leonard Huffman, B.S., M.Ed., Tuskegee Institute, 1962, 1965; William D. Osborn, B.S., 1966; James L. Smith, B.S., Edward Waters College; M.S., Tuskegee Institute, 1965.
Carolyn Brown Williams, B.S., Tuskegee Institute, 1962, 1968.
- MADISON**
Huntsville
R. O. Magnusson, B.S., 1948, 1965; Earl S. Halla, B.S., M.Ag., 1953, 1965; Robert Burton, B.S., Alabama A&M University, 1962, 1969; Lee R. Watkins, B.S., 1967.
Christine Huber, B.S., Peabody College, 1944, 1965; Jacquelyn B. Outlaw, B.S., Tuskegee Institute, 1968; Cecilia Diann Campbell, B.S., Jacksonville State University, 1969.

- MARENGO**
Linden Cecil Miller, B.S., M.Ag., 1954, 1968; Charles S. Foreman, B.S., M.Ed., Tuskegee Institute, 1945, 1965; Rudy P. Yates, B.S., 1960. Marjorie Weaver, B.S., 1943, 1965; Rosalyn Ketchum Palmer, B.S., 1960, 1965; Vera J. Wilson, B.S., Alabama A&M University, 1966.
- MARION**
Hamilton H. B. Price, B.S., 1945, 1965; I. D. Thornton, B.S., M.S., 1944, 1965; James N. Lunsford, III, B.S., 1969. Elna Tanner, B.S., M.S., University of Tennessee, 1950, 1965; Jane Tucker Phillips, B.S., Florence State University, 1967.
- MARSHALL**
Guntersville W. L. Martin, B.S., 1942, 1965; R. I. D. Murphy, B.S., M.Ag., 1958, 1965; Franklin H. Wood, B.S., 1963, 1965. Penelope Flippo, B.S., M.S., University of Alabama, 1962, 1969; Maxine Johnson, B.S., Florence State University, 1967.
- MOBILE**
Mobile Charles B. Vickery, B.S., 1948, 1965; W. R. Agerton, B.S., M.Ed., 1965; W. L. Deakle, 1943, 1965; Charles H. Kilpatrick, B.S., 1964, 1965. Mona Whatley, B.S., Peabody College, 1941, 1965; Myra N. Barton, B.S., University of Montevallo, 1968; Mildred Payne, B.S., 1941, 1965.
- MONROE**
Monroeville A. V. Culpepper, B.S., 1928, 1965; Mike M. Gamble, B.S., Mississippi State University, 1966; Walter C. Odom, B.S., Tuskegee Institute; M.S., University of Wisconsin, 1938, 1965; James H. Sellers, B.S., 1966. Annie Richardson, A.B., Judson College, 1952, 1965; DeLois Carmichael, B.S., M.Ed., Tuskegee Institute, 1952, 1965; Lois Annette Johnson, University of Southern Mississippi, 1967.
- MONTGOMERY**
Montgomery T. P. McCabe, B.S., M.Ag., 1939, 1965; Leonard E. Brown, B.S., Alcorn A&M College; M.S., Tuskegee Institute, 1964, 1965; Addre Bryant, B.S., Tuskegee Institute, 1954, 1965; Jack A. Thompson, B.S.; M.S., University of Tennessee, 1957, 1965. Virginia Gilchrist, B.S., University of Alabama; M.S., 1955, 1965; Annie M. Boynton, 1928, 1965; Janis Bea Cottrell, B.S., Huntingdon College, 1967.
- MORGAN**
Hartselle C. D. Rutledge, B.S., M.Ag., 1948, 1965; Eddie E. Cannon, B.S., Alabama A&M University; M.S., Tuskegee Institute, 1965; H. W. Houston, B.S., M.Ag., 1954, 1965; Jerry L. Parker, B.S., M.Ed., 1960, 1965. Lucile Hawkins, B.S., University of Montevallo, 1948, 1965; Mary O. Coffey, A.B., Judson College, 1961, 1965; Elouise Lipscomb, 1944, 1965.
- PERRY**
Marion W. O. Hairston, B.S., M.Ag., 1946, 1965; J. A. Bates, B.S., 1950, 1965; Richard E. Smith, B.S., Alabama A&M University, 1962, 1965. Evelyn Graham, B.S., University of Alabama, 1950, 1965; Patricia A. Bass, B.S., Alabama A&M University, 1969; Joyce Richardson, B.S., Judson College, 1958, 1965.
- PICKENS**
Carrollton Edward N. Graham, B.S., M.S., Mississippi State University, 1960, 1966; Thomas J. Dill, B.S., M.S., Mississippi State University, 1962, 1965; Walter D. Powers, B.S., 1966. Helen B. Hill, B.S., University of Montevallo; M.S., University of Alabama, 1941, 1965; Lorraine Meeks, B.S., University of Alabama, 1957, 1965.
- PIKE**
Troy H. J. Carter, B.S., 1935, 1965; Darell P. Dunn, B.S., 1965; James McLean, B.S., M.Ag.Ed., 1954, 1967. Florence Owens, B.S., Florida State University, 1958, 1965; Aris K. D'Andrea, B.S., M.S., University of Southern Mississippi, 1969.
- RANDOLPH**
Wedowee Grady M. Wakefield, B.S., M.Ag.Ed., 1957, 1965; T. F. Burnside, Jr., B.S., M.Ed., 1960, 1965; Theodore Shumpert, B.S., M.Ed., Tuskegee Institute, 1946, 1965. Barbara K. White, B.A., University of Mississippi, 1966; Elaine Evans, Jacksonville State University, 1969.

- RUSSELL**
Phenix City C. A. Woods, B.S., 1947, 1965; Mack H. Eldridge, B.S., Virginia State College, 1948, 1965; Tommy Chenoweth, B.S., 1969. Alma Holladay, B.S., M.Ed., 1941, 1965; Elnora Gandy, B.S., Tuskegee Institute, 1952, 1965.
- SHELBY**
Columbiana W. M. Clark, B.S., 1937, 1965; J. E. Jones, B.S., 1958, 1965; W. J. Thompson, B.S., M.S., 1954, 1965. Marian Cotney, B.S., 1939, 1965; Peggy Prucnal, B.S., Jacksonville State University, 1969.
- ST. CLAIR**
Pell City H. L. Eubanks, B.S., 1934, 1965; W. D. Jackson, B.S., 1946, 1965; J. E. Yates, B.S., 1955, 1965. Aileen Puckett, B.S., M.S., University of Alabama, 1957, 1965; Louise S. Littlejohn, B.S., University of Alabama, 1967.
- SUMTER**
Livingston B. B. Williamson, B.S., M.Ag., 1946, 1966; F. W. Kilgore, B.S., 1954, 1965; Joe E. Lashley, B.S., M.Ag., 1965; Henry J. Spears, B.S., Alabama A&M University; M.Ed., Tuskegee Institute, 1946, 1965. Mildred Ennis, B.S., University of Tennessee, 1958, 1965; Theresa E. Threadgill, B.S., Tuskegee Institute, 1957, 1965.
- TALLADEGA**
Talladega Thomas L. Bass, B.S., M.Ed., 1946, 1966; A. A. Hester, B.S., 1944, 1965; J. B. Mathews, B.S., 1949, 1965; Curtis H. O'Daniel, B.S., 1965, 1966; George A. Peasant, B.S., Tuskegee Institute, M.S., Virginia State College, 1950, 1965; Wanda Prater, Jacksonville State University, 1965, 1969. Martha J. Owens Sprayberry, B.S., 1966; Marie H. Player, B.S., Alabama A&M University; M.Ed., Tuskegee Institute, 1957, 1965.
- TALLAPOOSA**
Dadeville C. H. Webb, B.S., 1957, 1965; James L. McGhee, B.S., Alabama A&M University, M.Ed., Tuskegee Institute, 1968; James E. Pinion, B.S., 1966; R. W. Thompson, B.S., M.Ag.Ed., 1958, 1965. Margaret Miller, B.S., 1949, 1965; Linda M. Guas, B.S., Louisiana State University, 1969; Annette B. Wallace, B.S., Alabama A&M University, 1966.
- TUSCALOOSA**
Tuscaloosa R. R. Holstun, B.S., 1934, 1965; James Cooper, B.S., 1948, 1965; B. B. Fields, B.S., Tuskegee Institute; M.S., University of Illinois, 1954, 1965; James C. Howell, B.S., M.Ag.Ed., 1961, 1965; French Sconyers, B.S., 1943, 1965. Elizabeth Stewart, B.S.; M.S., University of Alabama, 1945, 1965; LaVurn Blount Stinson, B.S., Alabama A&M University, 1965; Mrs. O'Neal Massey, B.S.; M.S., University of Alabama, 1952, 1965; Sarah N. Watson, B.S., M.S., University of Alabama, 1961, 1965.
- WALKER**
Jasper Robert E. Thornton, B.S., M.Ag., 1954, 1965; Jerry B. Clark, B.S., M.Ed., 1965; W. D. Jones, B.S., M.Ag., 1954, 1965. Jeanette Argo, B.S., University of Montevallo; M.S., University of Alabama, 1942, 1965; Margaret P. Gray, B.S., University of Alabama, 1966; Mary Linda Maughan, B.S., Mississippi State College for Women, 1967.
- WASHINGTON**
Chatom D. O. Estes, B.S., 1949, 1965; Thomas E. Fuller, B.S., 1969; Sarah H. Hazen, B.S., 1964, 1965; Patricia Ann Taylor, B.S., University of Alabama, 1968.
- WILCOX**
Camden Robert C. Farquhar, B.S., M.S., 1949, 1965; Richard E. Cobb, B.S., 1963, 1965. Tuskegee Institute, 1968; W. J. Hardy, B.S., 1954, 1965. Solonia E. Reynolds, B.S., Alabama A&M University, M.Ed., Tuskegee Institute, 1949, 1965.
- WINSTON**
Double Springs W. L. Richardson, B.S., 1935, 1965; J. E. Fields, B.S., 1949, 1965. Madge Pennington, B.S., 1941, 1965.

ENGINEERING EXPERIMENT STATION STAFF

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., *President*
 BEN T. LANHAM, JR., B.S., M.S., Ph.D., *Vice President for Research*
 J. GRADY COX, B.S.Ch.E., M.S., Ph.D., *Director*
 CHARLES H. HOLMES, B.E.E., M.E.E., Ph.D., *Assistant Director*
 WILLIAM C. JONSON, Jr., B.S., *Assistant Director*

Aerospace Engineering

PITTS, ROBERT G. *Professor and Head of Department*
 B.A.E., Auburn University; M.S., California Institute of Technology.
 SFORZINI, RICHARD H. *Professor, 1966, 1967*
 B.S., U.S. Military Academy; Degree of Mechanical Engineering, Massachusetts Institute of Technology.
 MARTIN, FRED W. *Professor, 1956*
 B.S.A.E., M.S., Ph.D., Virginia Polytechnic Institute.
 BENNETT, ARTHUR G. *Associate Professor, 1968*
 B.S., University of Michigan; M.S., Ph.D., Purdue University.
 CUTCHINS, MALCOLM A. *Associate Professor, 1956, 1962*
 B.S.C.E., M.S.E.M., Ph.D., Virginia Polytechnic Institute.
 DRUMMOND, ALASTAIR M. *Associate Professor, 1967*
 B.A.Sc., University of British Columbia; D.C.A.E., College of Aeronautics, Cranfield, England; M.A.Sc., University of British Columbia; Ph.D., University of Toronto.
 HARWELL, KENNETH E. *Associate Professor, 1963*
 B.S., University of Alabama; M.S., Ph.D., California Institute of Technology.
 BURKHALTER, JOHNNY E. *Assistant Professor, 1968*
 B.A.E., M.S., Auburn University.
 PELL, KYNRIG M. *Assistant Professor, 1968*
 B.A.S.E., M.S., Ph.D., University of Florida.
 COCHRAN, JOHN E. *Instructor, 1966, 1969*
 B.A.E., M.S.A.E., Auburn University.
 CULBERSON, ROBERT N. *Instructor, 1968*
 B.A.E., M.S.A.E., Auburn University.
 FOSTER, WINFRED A. *Instructor, 1967, 1969*
 B.A.E., M.S.A.E., Auburn University.

Chemical Engineering

TAYLOR, ZELMA LOWELL, JR. *Associate Professor and Head of Department, 1970*
 B.S.Ch.E., University of Idaho; M.S., Auburn University; Ph.D., University of Florida.
 HSU, CHENG-TEH *Professor, 1953, 1962*
 B.S.C., University of Nanking; M.S., University of Wisconsin; Ph.D., University of Pennsylvania.
 WINGARD, ROBERT E. *Professor, 1932, 1969*
 B.S., Auburn University.
 HIRTH, LEO J. *Associate Professor, 1962*
 B.S., College of City of New York; M.S., Ph.D., University of Texas.
 ASKEW, WILLIAM C. *Assistant Professor, 1969*
 B.S., M.S., Auburn University; Ph.D., University of Florida.

Civil Engineering

RAINER, REX K. *Professor and Head of Department, 1962, 1968*
 B.C.E., M.C.E., Auburn University; Ph.D., Oklahoma State University.
 HUDSON, FRED M. *Professor, 1947, 1961*
 B.S.C.E., Purdue University; M.S., Princeton University.
 GIBSON, ROBERT W. *Associate Professor, 1969*
 A.B., Fort Hays Kansas State College; A.M., Ph.D., University of Illinois.
 KRISHNAMURTHY, N. *Associate Professor, 1967*
 Intermediate in Science, St. Joseph's College, Bangalore, India; B.Sc., Central College, Bangalore, India; B.E. (Civil), National Institute of Engineering, Mysore, India; M.S. (CE), Ph.D., University of Colorado.

- JUDKINS, JOSEPH F., JR. _____ *Assistant Professor, 1967*
B.S.C.E., M.S.S.E., Ph.D., Virginia Polytechnic Institute.
- KRAFT, LELAND M., JR. _____ *Assistant Professor, 1969*
B.C.E., M.S., Ph.D., Ohio State University.

Electrical Engineering

- CARROLL, CHESTER C. _____ *Professor and Head of Department, 1965, 1969*
B.S.E.E., M.S.E.E., Ph.D., University of Alabama.
- GRAF, EDWARD R. _____ *Alumni Professor, 1957, 1967*
B.E.E., M.E.E., Auburn University; Ph.D., Technische Hochschule, Stuttgart.
- HONNELL, MARTIAL A. _____ *Professor, 1958*
B.S.E.E., M.S.E.E., E.E., Georgia Institute of Technology.
- LOWRY, JAMES L. _____ *Professor, 1955, 1965*
B.E.E., M.E.E., Auburn University; Ph.D., University of Florida.
- PHILLIPS, CHARLES L. _____ *Professor, 1959, 1965*
B.E.E., M.S.E.E., Ph.D., Georgia Institute of Technology.
- HICKMAN, CHARLES E. _____ *Associate Professor, 1966*
B.S.E.E., M.S.E.E., Ph.D., University of Tennessee.
- NICHOLS, GROVER T. _____ *Associate Professor, 1947, 1950*
B.E.E., Auburn University; M.S., Georgia Institute of Technology.
- ROGERS, CHARLES L. _____ *Associate Professor, 1961, 1969*
B.E.E., M.S., Auburn University; Ph.D., Duke University.
- SLAGH, TIM D. _____ *Associate Professor, 1958, 1965*
B.S., Michigan College of Mining and Technology; M.S., Auburn University.
- BOLAND, JOSEPH S., III _____ *Assistant Professor, 1961, 1968*
B.S.E.E., M.S.E.E., Auburn University; Ph.D., Georgia Institute of Technology.
- JAMES, SYDNEY N. _____ *Assistant Professor, 1966*
B.S.E.E., M.S.E.E., Ph.D., University of Alabama.
- AMOSS, JOHN W. _____ *Instructor, 1964, 1969*
B.E.E., Auburn University; M.S.E.E., Georgia Institute of Technology.
- CARTER, MARION B. _____ *Instructor, 1967*
B.S., M.S., University of Tennessee.
- COLEMAN, ROBERT J. _____ *Instructor, 1964, 1967*
B.S.E.E., M.S., Auburn University.
- DEFFEBACH, HARRY L. _____ *Research Associate, 1963, 1967*
B.E.E., M.S., Auburn University.
- JOHNSON, JOHN C. _____ *Research Associate, 1966, 1969*
B.S.E.E., Auburn University.
- KULAS, CHRISTOPHER E. _____ *Instructor, 1968*
B.S.E.E., General Motors Institute; M.S., Auburn University.
- NALE, LUTHER J. _____ *Research Associate, 1966, 1969*
B.S.E.E., Auburn University; M.S., University of Alabama.
- PADGETT, WILLIAM T. _____ *Research Associate, 1967, 1969*
B.S.E.E., Auburn University.
- PETTUS, ROBERT O. _____ *Instructor, 1967*
B.S.E.E., M.S.E.E., Auburn University.
- WHITE, RONALD _____ *Research Associate, 1965, 1969*
B.E.E., M.S.E.E., Auburn University.

Industrial Engineering

- BROOKS, GEORGE H. _____ *Professor and Head of Department, 1966*
B.I.E., Florida State University; M.S.I.E., Ph.D., Georgia Institute of Technology.
- HOOL, JAMES N. _____ *Associate Professor, 1965, 1967*
B.S., M.S., Ph.D., Purdue University.

Mechanical Engineering

- VESTAL, DONALD M., JR. _____ *Professor and Head of Department, 1959*
B.S.M.E., B.S.E.E., M.S.M.E. Texas A&M University; Ph.D., Stanford University.

- BUSSELL, WILLIAM H. *Professor, 1965*
B.M.E., M.S.E., University of Florida; Ph.D., Michigan State University.
- JEMIAN, WARTAN A. *Professor, 1962, 1965*
B.S.Ch., University of Maryland; M.S., Ph.D., Metallurgical Engineering, Rensselaer Polytechnic Institute.
- JONES, EDWARD O., JR. *Professor and Assistant Head Professor, 1946, 1965*
B.M.E., B.E.E., Auburn University; M.S., University of Illinois.
- MAYNOR, HAL W. *Professor, 1959*
B.S., M.S., D. of Engineering, University of Kentucky.
- SHAW, WINFRED A. *Professor, 1958*
B.S.G.E., University of Mississippi; M.S.E.M., University of Texas; Ph.D., Stanford University.
- SWINSON, WELDON F. *Professor, 1964, 1967*
B.A., Rice University; B.S.M.E., Texas Technological College; M.S.M.E., Texas A&M University; Ph.D., University of Illinois.
- TANGER, GERALD E. *Professor, 1958, 1960*
B.S., South Dakota School of Mines and Technology; M.S., Brown University; Ph.D., Oklahoma State University.
- VACHON, REGINALD I. *Alumni Professor, 1958, 1967*
B.M.E., M.S.N.S., Auburn University; Ph.D., Oklahoma State University.
- DYER, DAVID F. *Associate Professor, 1969*
B.S.M.E., University of Tennessee; M.S.M.E., Ph.D., Georgia Institute of Technology.
- FLUKER, BILLIE J. *Associate Professor, 1960*
B.S.E.E., M.S.M.E., Texas A&M University; Ph.D., Tulane University.
- WILCOX, ROY C. *Associate Professor, 1969*
B.S., M.S., Virginia Polytechnic Institute; Ph.D., University of Missouri.
- DUNN, JERRY R. *Assistant Professor, 1966*
B.S.M.E., Lamar State College of Technology; M.S.M.E., Georgia Institute of Technology.
- GOODLING, JOHN S. *Assistant Professor, 1968*
B.S.M.E., M.S.M.E., Ph.D., University of Florida.
- HARMON, GRADY R. *Assistant Professor, 1963, 1965*
B.E.P., M.S., Auburn University.
- LEPPERT, ALFRED M. *Assistant Professor, 1965*
B.M.E., Georgia Institute of Technology; M.S., Stanford University.
- MAPLES, GLENNON *Assistant Professor, 1966*
B.S., M.S., Mississippi State University; Ph.D., Oklahoma State University.
- YU, JAMES C. M. *Assistant Professor, 1963, 1967*
B.S., National Taiwan University; M.S., Virginia Polytechnic Institute; Ph.D., Auburn University.

Textile Engineering

- ADAMS, CLEVELAND L. *Professor and Head of Department, 1952*
B.T.E., Auburn University.
- WATERS, WILLIAM T. *Professor, 1958, 1963*
B.S.T.E., Clemson University; M.S., Georgia Institute of Technology.
- FARROW, JAMES C. *Associate Professor, 1949, 1965*
B.S.T.E., Auburn University.
- HALL, DAVID M. *Associate Professor, 1965*
B.T.C., Auburn University; M.S.T.C., Clemson University; Ph.D., Victoria University (England).
- MORTON, GLENN P. *Assistant Professor, 1967*
B.S., McMurry College; M.S., Auburn University.
- WALKER, ROBERT P. *Assistant Professor, 1968*
B.S.T.M., Auburn University; M.S., Institute of Textile Technology.

ENGINEERING EXTENSION SERVICE

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., *President*
 FRED R. ROBERTSON, JR., B.S., M.S., Dr.P.A., *Vice President for Extension*
 J. GRADY COX, B.S.Ch.E., M.S., Ph.D., *Dean, School of Engineering*
 JOHN L. CAIN, B.Ch.E., *Director*
 JAMES F. O'BRIEN, JR., B.M.E., M.M.E., *Assistant Director*
 WILLIAM B. SANFORD, B.M.E., M.M.E., *Director, Birmingham Office*
 BILLY R. MANNING, B.S., *Director, Civil Defense Professional Advisory Center*
 OLAN A. HEMBEC, *Administrative Assistant*

Aerospace Engineering

CUTCHINS, MALCOLM A. *Associate Professor, 1966, 1968*
 B.S.C.E., M.S.E.M., Ph.D., Virginia Polytechnic Institute.
 DECKER, HAROLD R. *Assistant Professor of Aerospace Engineering, 1965*
 B.S.Ed., Northeast Missouri State Teachers College; M.Litt., University of Pittsburgh.
 KITELEY, GARY W. *Assistant Professor, 1965*
 B.S., University of Minnesota; M.S., Purdue University; F.A.A., A & P Certificate, Parks College.
 TOWNSEND, JOHN E. *Assistant Professor, 1967*
 A.B., M.A., Bob Jones University; M.S., Purdue University.

Chemical Engineering

TAYLOR, ZELMA LOWELL, JR. *Associate Professor and Head of Department, 1962, 1970*
 B.S.Ch.E., University of Idaho; M.S., Auburn University; Ph.D., University of Florida.
 WINGARD, ROBERT E. *Professor, 1932, 1963*
 B.S., M.S., Auburn University.
 HIRTH, LEO J. *Associate Professor, 1962*
 B.S., College of City of New York; M.S., Ph.D., University of Texas.
 VIVES, DONALD L. *Associate Professor, 1953, 1968*
 B.S., M.S., Columbia University.

Civil Engineering

RAINER, REX KELLY *Professor and Head of Department, 1962, 1968*
 B.C.E., M.C.E., Auburn University; Ph.D., Oklahoma State University.
 BRANSFORD, THOMAS L. *Professor, 1965*
 B.E., C.E., Vanderbilt University.
 BLAKNEY, WILLIAM G. G. *Associate Professor, 1958, 1961*
 B.E., Nova Scotia Technical College; M.Sc., Ohio State University.
 GIBSON, ROBERT W. *Associate Professor, 1969*
 A.B., Fort Hays Kansas State College; A.M., Ph.D., University of Illinois.
 KRISHNAMURTHY, N. *Associate Professor, 1967*
 B.Sc., B.E., University of Mysore, India; M.S., Ph.D., University of Colorado.
 JUDKINS, JOSEPH F., JR. *Assistant Professor, 1967, 1968*
 B.S.C.E., M.S.E.E., Ph.D., Virginia Polytechnic Institute.
 KRAFT, LELAND MILO, JR. *Assistant Professor, 1969*
 B.C.E., M.S., Ph.D., Ohio State University.

Electrical Engineering

CARROLL, CHESTER C. *Professor and Head of Department, 1966, 1969*
 B.S.E.E., M.S.E.E., Ph.D., University of Alabama.
 GRAF, EDWARD RAYMOND *Alumni Professor, 1957, 1967*
 B.E.E., M.E.E., Auburn University; Ph.D., University of Stuttgart, Germany.
 LOWRY, JAMES LEE *Professor, 1955, 1965*
 B.E.E., M.E.E., Auburn University; Ph.D., University of Florida.
 PHILLIPS, CHARLES L. *Professor, 1959, 1965*
 B.E.E., M.S.E.E., Ph.D., Georgia Institute of Technology.
 FEASTER, WILLIAM M. *Associate Professor, 1956, 1965*
 B.S.E.E., M.S.E.E., Auburn University.

- BOLAND, JOSEPH S., III *Assistant Professor, 1961, 1968*
 B.S.E.E., M.S.E.E., Auburn University; Ph.D.E.E., Georgia Institute of Technology.

Industrial Engineering

- BROOKS, GEORGE H. *Professor and Head of Department, 1966*
 B.I.E., University of Florida; M.S.I.E., Ph.D., Georgia Institute of Technology.
- DENHOLM, DONALD H. *Professor, 1968*
 B.S., Pennsylvania State University; M.S., Washington University.
- SMITH, LEO ANTHONY *Assistant Professor, 1969*
 B.S.I.E., M.S.I.E., Georgia Institute of Technology; Ph.D., Purdue University.
- TRUCKS, LOUIS B. *Assistant Professor, 1964*
 B.S., Auburn University; M.S., University of Pittsburgh.

Mechanical Engineering

- VESTAL, DONALD M., JR. *Professor and Head of Department, 1959*
 B.S.M.E., B.S.E.E., M.S.M.E., Texas A & M University; Ph.D., Stanford University.
- VACHON, REGINALD I. *Alumni Professor, 1958, 1967*
 B.M.E., M.S.N.S., Auburn University; Ph.D., Oklahoma State University.
- JEMIAN, WARTAN A. *Professor, 1962, 1965*
 B.S.Ch., University of Maryland; M.S., Ph.D., Metallurgical Engineering; Rensselaer Polytechnic Institute.
- TANGER, GERALD *Professor, 1958, 1968*
 B.S., South Dakota School of Mines and Technology; M.S., Brown University; Ph.D., Oklahoma State University.
- DYER, DAVID F. *Associate Professor, 1965, 1969*
 B.S.M.E., University of Tennessee; M.S.E.E., Ph.D., Georgia Institute of Technology.

Textile Engineering

- ADAMS, CLEVELAND L. *Professor and Head of Department, 1952*
 B.T.E., Auburn University.
- FARROW, JAMES C. *Associate Professor, 1949, 1965*
 B.S.T.E., Auburn University.
- HALL, DAVID M. *Associate Professor, 1965*
 B.T.C., Auburn University; M.S.T.C., Clemson University; Ph.D., Victoria University of Manchester, England.

STATE REGULATORY AND VETERINARY SERVICES

STATE REGULATORY SERVICE

CHEMISTRY

GUTHRY, MILFORD DALTON	Chief Chemist III, 1966
B.S., M.S., Auburn University.	
RHOADES, REGINA A.	Agricultural Chemist II, 1961, 1967
B.S., Auburn University.	
JORDAN, DARRY	Agricultural Chemist II, 1966, 1968
B.S., M.S., Auburn University.	
HAYES, MELVIN	Agricultural Chemist II, 1966, 1968
B.S., University of West Virginia.	
HAYES, ROSE MAE	Agricultural Chemist I, 1967
B.S., Florence State University.	
DAVIDSON, PRISCILLA P.	Agricultural Chemist I, 1968
B.S., M.S., Auburn University.	

STATE VETERINARY DIAGNOSTIC LABORATORY

(Conducted in cooperation with the Alabama State Department of Agriculture and Industries and the United States Department of Agriculture, Agricultural Research Service.)

GREENE, JAMES E.	Dean (School of Veterinary Medicine), 1937, 1958
D.V.M., M.S., Auburn University.	
MILLIGAN, JOHN G.	State Veterinarian, 1951
B.S., D.V.M., Auburn University.	
TAYLOR, JULIAN B.	Associate State Veterinarian, 1945
D.V.M., Auburn University.	
ROBERTS, CHARLES S.	In Charge (State Diagnostic Laboratory), 1947, 1963
D.V.M., Auburn University; M.S., Michigan State University.	
LONG, IRL RICHARD, JR.	Bacteriologist (State Diagnostic Laboratory), 1966
A.B., Huntingdon College.	
NICHOLSON, LINDA	Bacteriologist (State Diagnostic Laboratory), 1968
B.S., University of Alabama.	
ALLEY, J. LEE	Epidemiologist (U.S. Dept. of Agriculture, Agricultural Research Service, D.V.M.), 1967
CHRISTENBERRY, C. C.	Brucellosis Epidemiologist (U.S. Dept. of Agriculture, Agricultural Research Service, D.V.M.), 1966
EMBRICK, V. R.	In Charge of Bang's Disease Laboratory (U.S. Dept. of Agriculture, Agricultural Research Service), 1949
WILLIAMSON, O. B.	U.S. Dept. of Agriculture, Agricultural Research Service, Biological Laboratory Aide, 1955
WILLIAMSON, RUTH	U. S. Dept. of Agriculture, Agricultural Research Service, Biological Laboratory Aide, 1957
LITTLE, FLETCHER C.	U.S. Dept. of Agriculture, Agricultural Research Service, Biological Laboratory Aide, 1964
POOLE, JAMES H.	In Charge of State Veterinary Diagnostic Laboratory, Albertville, Alabama, 1964
D.V.M., Auburn University.	
EDWARDS, SPENCER C.	Bacteriologist, State Veterinary Diagnostic Laboratory, Albertville, Alabama, 1964
B.S., Huntingdon College.	
McCREARY, V. D.	In Charge of State Veterinary Diagnostic Laboratory, Elba, Alabama, 1960
D.V.M., Auburn University.	
MOODY, HAROLD M.	Bacteriologist, State Veterinary Diagnostic Laboratory, Elba, Alabama, 1955, 1962
B.S., Troy State University.	

Table 1—Enrollment by Classes, Courses and Divisions—Continued

DIVISION AND COURSE															
Freshmen		Sophomores		Juniors		Seniors		5th Year		Special and Unclassified		Total			
M	W	M	W	M	W	M	W	M	W	M	W	M	W		
1	7	2	9	3	7	1	6					7	29		
1		1		3	1	1						6	1		
2	4	11	3	17	7	8	12					41	26		
5	5	3	10	6	4	10	2			3	1	24	22		
22	38	23	20	23	14	22	19			1		91	91		
1				2		2						5			
1		1													
9	5	9	4	20	6	8	4					46	19		
2	2	6	7	5	7	1	1					13	17		
5	14	7	43	14	44	15	27			1		41	129		
	5	8	8	10	8	6	9			3		24	33		
		3	1	2		3	1					10	2		
2				1											
	25	1	16	1	17	8	8			1		2	67		
17	12	17	17	23	9	13	9					70	47		
12	4	9	1	11	2	7	1					39	8		
1												1			
25	2	24		12		11				1		73	2		
72	5	61	4	49		46	1					228	11		
66	12	35	10	28	3	20				1		150	25		
36	23	45	14	1	2							83	39		
63	11	28	6	18		4				10		123	18		
		13	13	14	7	21	5			1		53	29		
4	3														
549	448	375	262	331	179	255	129	Graduate School		23	10	1,533	1,028		
												TOTAL (Arts and Sciences)		1,774	1,160
School of Business															
3		30	9	52	14	17	3			1		103	27		
94	9	273	26	317	26	505	36			31		1,220	99		
2		9		7	1	4				2		24	1		
4		7		13	2	2	1					26	3		
14		35	9	24	2	2				2		77	11		
3		21	2	18		1				2		45	2		
2		12	1	30	5	2	1					46	7		
		10	10	3			3								
		5		10		2									
1	14	4	4			2						17	30		
		4	5			2				1		211	5		
205	24	4	2	1	1	1						3	24		
	4	2	16		7		8					1	1		
		1		4		1						6	35		
328	51	398	78	476	61	537	52	Graduate School		39	3	1,778	245		
												TOTAL (Business)		1,871	249

[illegible]

Table II—Enrollment of Alabama Students by Counties

FALL QUARTER, 1969			
County	Men	Women	Total
Autauga	42	25	67
Baldwin	118	41	159
Barbour	48	38	86
Bibb	11	6	17
Blount	35	16	51
Bullock	36	16	52
Butler	46	25	71
Calhoun	128	46	174
Chambers	176	85	261
Cherokee	19	8	27
Chilton	42	12	54
Choctaw	17	4	21
Clarke	39	32	71
Clay	42	21	63
Cleburne	14	9	23
Conecuh	90	39	129
Coffee	64	20	84
Colbert	33	13	46
Coosa	48	19	67
Covington	97	46	143
Crenshaw	33	18	51
Cullman	79	19	98
Dale	86	29	115
Dallas	106	57	163
DeKalb	58	43	101
Elmore	115	55	170
Escambia	58	28	86
Etowah	183	105	288
Fayette	21	8	29
Franklin	25	14	39
Geneva	46	28	74
Greene	4	5	9
Hale	21	9	30
Henry	53	22	75
Houston	149	69	218
Jackson	62	27	89
Jefferson	1144	702	1846
Lamar	5	2	7
Lauderdale	93	36	129
Lawrence	37	11	48
Lee	586	415	1001
Limestone	47	25	72
Lowndes	19	9	28
Macon	39	32	71
Madison	327	188	515
Marengo	40	19	59
Marion	33	7	40
Marshall	101	65	166
Mobile	317	175	492
Monroe	45	42	87
Montgomery	715	414	1129
Morgan	140	75	215
Perry	21	8	29
Pickens	18	7	25
Pike	41	16	57
Randolph	75	50	125
Russell	121	44	165
Shelby	30	13	43
St. Clair	50	29	79
Sumter	18	1	19
Talladega	128	69	197
Tallapoosa	177	91	268
Tuscaloosa	34	9	43
Walker	40	30	70
Washington	12	7	19
Wilcox	27	11	38
Winston	16	8	24
TOTAL (Alabama)	6740	3667	10,407

Table III—Enrollment of Students by States and Territories**FALL QUARTER, 1969**

State	Men	Women	Total
Alaska	2	0	2
Arizona	6	1	7
Arkansas	18	4	22
California	21	8	29
Colorado	4	0	4
Connecticut	9	1	10
Delaware	4	3	7
District of Columbia	1	0	1
Florida	600	238	838
Georgia	868	458	1326
Muscookee, Georgia	177	125	302
Hawaii	1	2	3
Idaho	1	1	2
Illinois	18	8	26
Indiana	12	5	17
Iowa	5	2	7
Kansas	5	2	7
Kentucky	102	19	121
Louisiana	62	19	81
Maine	2	0	2
Maryland	41	8	49
Massachusetts	5	2	7
Michigan	12	3	15
Minnesota	6	2	8
Mississippi	138	34	172
Missouri	7	0	7
Montana	1	0	1
Nebraska	1	0	1
New Hampshire	1	0	1
New Jersey	34	8	42
New Mexico	3	0	3
New York	43	7	50
North Carolina	48	15	63
North Dakota	1	0	1
Ohio	31	8	39
Oklahoma	10	4	14
Oregon	2	0	2
Pennsylvania	23	5	28
Rhode Island	1	2	3
South Carolina	61	16	77
South Dakota	3	3	6
Tennessee	257	105	362
Texas	47	17	64
Utah	2	0	2
Vermont	0	1	1
Virginia	81	29	110
Washington	4	1	5
West Virginia	6	1	7
Wisconsin	4	3	7
Wyoming	1	0	1
TOTAL—Other States	2792	1170	3962
TOTAL—All States	9532	4837	14,369
United States Territories			
Puerto Rico	3	0	3
TOTAL—U. S. Territories	3	0	3

Table IV—Enrollment of Students by Foreign Country**FALL QUARTER, 1969**

Foreign Country	Men	Women	Total
Afghanistan	1	0	1
Arabia	3	0	3
Austria	1	0	1
Bahamas	2	0	2
Bolivia	1	0	1
Brazil	3	0	3
Canada	5	0	5
China	34	8	42
Columbia	1	0	1
Costa Rica	1	0	1
Cuba	7	2	9
Egypt	4	0	4
El Salvador	1	0	1
England	2	2	4
Formosa	1	0	1
Germany	1	1	2
Dominican Republic	1	0	1
Honduras	1	0	1
Hong Kong	4	0	4
India	26	2	28
Indonesia	2	0	2
Iran	14	1	15
Iraq	1	0	1
Japan	2	0	2
Jordan	2	0	2
Korea	2	1	3
Lebanon	1	0	1
Mexico	0	1	1
Pakistan	3	0	3
Paraguay	1	0	1
Peru	1	0	1
Switzerland	1	0	1
Thailand	0	1	1
Turkey	1	0	1
Venezuela	1	1	2
Virgin Islands	1	0	1
TOTAL—Foreign Countries	133	20	153
TOTAL STUDENTS ENROLLED			
Fall Quarter, 1969	9668	4857	14,525

General Summary of Enrollment

Total Enrollment on Auburn Campus	14,525
Correspondence Study	760
Clinics, Conferences, etc.	13,500
Montgomery Center (Credit)	590
Montgomery Center (Non-Credit)	222
GRAND TOTAL	29,597

GENERAL INDEX

	Page		Page
A		Associated Women Students	39
Academic Administrative Officers and Faculty	535	Auburn Union	39
Academic Eligibility	52	Automobile Registration	55
Clearing Probation	52	Aviation, Auburn School of	144
Continued Residence	52	Aviation Management	147, 212
Probation	52		
Suspension	52	B	
Academic Program	11	Basic Quarterly Charges	30
Accounting	112, 192	Basic Vocational Education	139
Accounting and Finance	112, 192	Biochemistry (See Alternate Curriculum in Chemistry)	100
Administration and Supervision	194	Biological Sciences	66, 13
Administrative Council	5	Biological Sciences and Teacher Education	6
Administrative Staff	370	Biology	91, 214
Admissions	17	Board of Trustees	4
Auditors	23	Bookstores, Student	38
Former Students	23	Botany and Plant Pathology	214
Freshman Class	19	Building Construction	130
Graduate Standing	23	Building Technology	217
International Students	22	Business Education	131
Non-Resident Students	17	Business Management	131
Pre-College Counseling Program	18	Business, School of	108
Special Students	22	Business, Bachelor of Science Degree	108
Transfer Students	21	Cooperative Education Program	108
Transient Students	21	Objectives	108
Unclassified Students	22	Pre-Business Program	109
Adult Education	130, 139	Professional Option Program	109
Aerospace Engineering	146, 195	Teacher Education Program (Dual Objectives Program)	109
Aerospace Studies	198		
Agricultural Economics and Rural Sociology	199	C	
Agricultural Education	130, 139	Calendar of Events	2, 3
Agricultural Engineering	64, 201	Campus and Buildings	13
Agricultural Experiment Station Staff	373	Chemical Engineering	148, 218
Agriculture, School of	58	Chemistry, Curriculum in	99
Agricultural Science, Curriculum in	58	Alternate Curriculum in	100
Bachelor of Science in Agricultural Business and Economics	63	Child Study Laboratories	164
Biological Sciences and Teacher Education	68, 69	Civil Engineering	149, 222
Forestry Honors Program	71	Class Enrollment and Attendance	45
Production Technology	60	Clothing and Textiles	132
Agricultural Science	58	Clothing, Textiles and Related Arts	160
Agronomy and Soils	59, 203	Computer Center	178
AFOTC College Scholarship Program	188	Consumer Affairs	159, 227
AFOTC Uniforms and Equipment	189	Co-Operative Education Programs	44, 89, 144
Air Force Aerospace Studies	187	Co-Operative Extension Service Staff	383
Animal Science	60, 205	Correspondence Study Program	43
Applied Music	83, 290	Counseling Service	35
Applied Physics, Curriculum in	106	Counselor Education	231
Architecture and Fine Arts, School of	75	Cultural, Musical, Theatrical Activities	39
Architecture, Admission to and Acceptance by	75		
Architecture, Bachelor of	75	D	
Architecture, Honors Program	77	Dairy Science	60, 232
Architecture, Transfer Students to	76	Dean's List	52
Bachelor of Music (Majors)	82	Degree Requirements	53
Building Construction, Bachelor of	81	Description of Courses	191
Fine Arts, Bachelor of	79	Discipline	56
Industrial Design, Bachelor of	78	Distributive Business	131
Interior Design, Bachelor of	75	Distributive Education	131, 140
Music, Teacher Education in	86	Doctoral Degree Program	178
Simulated State Board Examinations	76	Dual Objectives Program	117, 168
Supplementary Requirements for Bachelor of Music and Bachelor of Arts			
Degree Candidates	85	E	
Theatre, Bachelor of Arts in	87	Economics	113, 134, 234
Architecture Honors Program	77	Economics and Geography	113, 234
Army ROTC Aviation Program	181	Education, School of	119
Art	79, 130, 210	Dual Objectives Program	120
Arts and Sciences, School of	88	Guides for Completion of Programs in	
Advisory Services for Students	88	Teacher Education	135
Bachelor's Degree Programs	88	Pre-Professional Requirements, Education	125
Cooperative Education Programs	89	Professional Preparation Programs	119
General Curriculum	90	Professional Requirements	126
Graduate Degrees	89	Programs and Degrees, Undergraduate	119
Liberal Education Program		Programs and Degrees, Graduate	120
Majors and Minors	88	Related Programs and Services	121-125
Pre-Professional Curricula	94	Requirements, Major and Minor Fields of Specialization	129-135
Special Curricula	99	Scholastic Requirements	125
Special Requirements for Departmental Majors	91	Educational Media	131
Teacher Education	89	Electrical Engineering	151, 237
Assistance Programs	33	Elementary Education	119, 127, 135, 233

GENERAL INDEX

	Page		Page
Emeriti	367	History	134, 262
Employment	34	History of Auburn University	7
Engineering Curricula	143, 146	Home Economics	132
Engineering Experiment Station Staff	393	Home Economics, School of	159
Engineering Extension Service	144	Child Study Laboratories	164
Engineering Extension Service Staff	396	Clothing, Textiles and Related Arts	160
Engineering Graphics	242	Consumer Affairs	159, 227
Engineering, School of	142	Family and Child Development	163
Admission Requirements	142	Family and Child Services	165
Aviation Management	147	Fashion Merchandising	161
Co-Operative Education Program	144	Fashion Institute of Technology	161
Engineering, Curricula in	146	Graduate Work	168
Graduate Degrees	144	Home Management and Family Economics	164
Humanistic Social Studies	146	Housing, Interior Furnishing, and	
Liberal Education	142	Equipment	162
Management Curricula	144	Institution Food Management	166
Military Training	144	Nutrition and Foods	167, 292
Pre-Engineering	145, 146	Option in Co-Operative Extension	168
Service Department	144	Pre-Nursing Science	167
English	92, 131, 243	Programs	159
Enrollment Statistics	399	Teacher Education	168
Alabama Students by Counties	403	Home Management and Family Economics	164
Classes, Courses and Divisions, Fall 1969	399	Home Management, Housing and	
Foreign Country	405	Equipment	132
General Summary	405	Housing, Interior Furnishings and	
States and Territories	404	Equipment	162
Examinations and Grades	51	Horticulture	61, 265
Examinations and Reports	51	Higher Education	275
Examination Station Properties	13		
Extension and Correspondence Courses	54		
Extension Division	10		
		I	
F		Index by Fields of Instruction	191
Faculty	335	Industrial Arts Education	132, 140
Faculty and Staff	334	Industrial Design	78, 209
Family and Child Development	163	Industrial Engineering	152, 268
Family and Child Services	165	Industrial Laboratories	271
Family Life and Child Development	132, 246	Industrial Management	116
Fashion Institute of Technology	161	In-Service Agricultural Education &	
Fashion Merchandising	161	Supervision	125
Fees and Charges	29, 80	Insurance, Student	38
Field Services	123	Institution Food Management	166
Fields of Study	11	Instruction Division	8
Finance	112, 193	Interdepartmental Education	272
Financial Aid	33	Interior Design	77, 208
Financial Assistance Program	181	Intramural Sports	41
Fine Arts	79	Italian	250
Fisheries and Wildlife	68		
Food Science	69	J	
Foods and Nutrition	132	Journalism	93, 275
Foreign Languages	90, 133, 248		
Forest Management	70	L	
Forestry	70, 251	Laboratory Experiences	128
Foundations of Education	119, 127, 254	Laboratory Technology	102, 276
French	133, 248	Landscape and Ornamental Horticulture	72, 265
Functions of Auburn University	8	Latin	250
		Law Enforcement	103
G		Learning Resources Center	124
General Administrative Officers	334	Liberal Education Program	57, 88
General Curriculum, Arts and Sciences	91	Library	14, 276
Geography	114, 134, 236	Living Accommodations	24
Geology	101, 256		
German	135, 249	M	
Grading System	51	Management	115, 144, 276
Graduate Degrees	177	Management Services	131
Graduate School	177	Marketing	117
Admission and Application	177	Marketing and Transportation	117, 278
Doctoral Degree Program	178	Married Students Housing	29
Graduate Degrees	177	Materials Engineering	107, 154, 279
Master of Arts	177	Mathematics	104, 132, 279
Master of Science	177	Mechanical Engineering	153, 283
Other Master's Degrees	177	Medical Technology, Degree	
Specialist in Education	178	Requirements for	102
Graduate Work, Home Economics	168	Men Students Housing	24
Graduation Honors	55	Metal Technology	131
		Military Science	179, 287
H		Military Service Information	49
Health Education	132, 137	Military Training	144
Health, Physical Education and		Music	82, 133, 288
Recreation	119, 128, 132, 137, 138, 257		
Health Service	36		

GENERAL INDEX

Page

Page

N

National Honor Societies	41
National Recognition Societies	41
Naval Honor Graduates	187
Naval Science	183, 292
NROTC, Qualifications for Enrollment	185
NROTC Students, Types of	183
Nutrition and Foods	166, 292

O

Off-Campus Credit	54
Office Administration	117, 131, 277
Organizations (Campus, National, Professional and Social)	41, 43
Orientation Program, Veterinary Medicine	175

P

Personnel Management and Industrial Relations	116
Pharmacognosy	297
Pharmaceutical Chemistry	295
Pharmacology-Toxicology	296
Pharmacy	294
Pharmacy Administration	297
Pharmacy Extension Program	170
Pharmacy, School of	169
Admissions Requirements	169
Careers in Pharmacy	169
Curriculum	171
Curriculum Option	170
Pharmacy Extension	170
Recommended Electives	171
Scholarships and Loans	170
Philosophy	93, 297
Physical Education	49, 132
Physical Science	299
Physics	104, 133, 299
Political Science	134, 302
Portuguese	250
Poultry Science	62, 305
Power Mechanics	131
Pre-Dentistry	95
Pre-Engineering	145
Pre-Medicine	95
Pre-Nursing Science	167
Pre-Pharmacy	97
Pre-Professional Curricula	94
Pre-Professional Requirements	125
Pre-Veterinary Medicine	98
Professional Requirements	126
Psychology	94, 134, 306
Purposes of Auburn University	8

R

Recreation	132
Regulations, Academic	45
Rehabilitation Services Education	133, 140
Research Division	9
Research Programs (ORAU)	178
Reserve Officers Training Corps	179
Military Science, Department of	179
Advanced Course	180
Army ROTC Aviation Program	181
Basic Camp	179
Basic Course	179
Financial Assistance Program	181
Selective Service Deferments	182
Naval Science, Department of	183
Curriculum, Navy Candidates and Marine Candidates	186
Flight and Ground Instruction	187
NROTC Enrollment, General	185
Qualifications for	185
NROTC Students, Types of	183
Selective Service Deferment	186
Air Force Aerospace Studies, Department of	187
College Scholarship Program	188
Field Training Course	188
General Military Course	188
Professional Officer Course	188

Revenue, Sources of	15
ROTC Uniforms and Equipment	181
Rural Sociology	201
Russian	250

S

Scholarships and Loans	170
School Library Media and Audio Visual Personnel	274
Science	153, 310
Secondary Education	119, 127, 137, 309
Selective Service Deferments	182, 186
Small Animal Surgery and Medicine	320
Social Science	134
Sociology	134, 311
Spanish	249
Special Education (Mental Retardation)	136, 273
Special Regulations	55
Specialist in Education Program	178
Speech	134, 312
Speech and Hearing Clinic	38
Speech Correction	134
State Regulatory and Veterinary Services	398
State Veterinary Diagnostic Laboratory	398
Student Activities	38
Student Body	38
Student Personnel Services	121
Student Publications	39
Student Services	35

T

Teacher Certification Services	121
Teacher Education	86, 89, 109, 135, 168
Teacher Preparation	125
Teaching and Program	127
Textile Chemistry	157
Textile Engineering	156, 316
Textile Management	158
Theatre	87, 134, 317
Trade and Industrial Education	135, 141

U

University Courses	192
University Liberal Education Program	57
University Placement Service	36
University Regulations	45

V

Veterans and Dependents of Veterans	
Benefits	34
Veterinary Medicine	319
Veterinary Medicine, School of	172
Admission	172
Admission under Regional Plan	173
Applicants, Information for	173
Extension	176
Graduate	176
Orientation Program	175
Requirements, Graduation	175
Requirements, Scholastic	175
Withdrawal	175
Visual Design	80, 211
Vocational and Adult Education	127, 138, 325
Vocational Education	130
Vocational Rehabilitation Service	125

W

Women's Housing	26
Wood Technology	72

Z

Zoological Sciences	66
Zoology and Entomology	67, 328